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Final Report

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DEVELOPMENT OF AIR FORCE
FLIGHT SAFETY MODELS

Volume 14

T-39A

AIRCRAFT

September 1976

Prepared for

SERVICE ENGINEERING DIVISION
SAN ANTONIO AIR LOGISTICS CENTER
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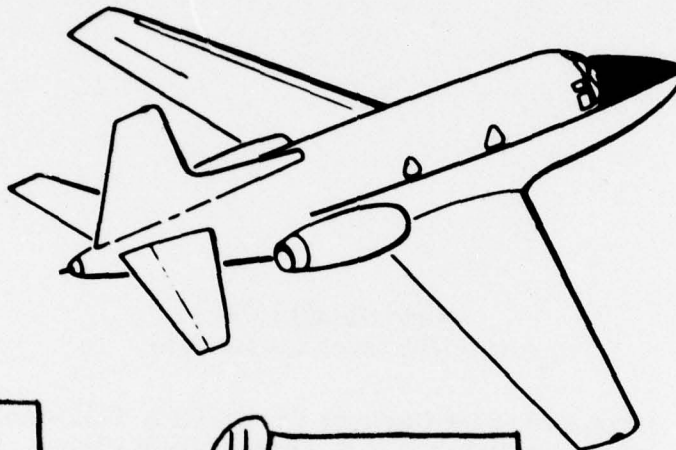
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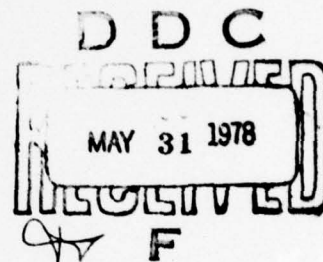
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ABSTRACT

A general description of the Flight Safety Prediction Technique, and the documentation associated with its specific application to the T-39A aircraft, are presented.

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GLOSSARY

This glossary presents general definitions of terms used in this report. The reader will find certain of these terms defined in somewhat different words in the text, depending on the context of the discussion; but the meaning will be consistent with the definitions given here.

- | | |
|----------------------------|--|
| Criticality | - A numerical index of the significance of equipment failure history relative to aircraft safety. As an analysis parameter, it can be considered proportional to the likelihood that an item will fail and thereby cause an accident. It is the product of the failure probability and the sensitivity of an equipment item. |
| Dependency | - See link dependency. |
| FSPT | - Flight Safety Prediction Technique |
| Flight Phases | - Discrete segments of the aircraft mission profile. For present purposes, the flight phases are defined as 1) startup and taxi, 2) takeoff, 3) climb, 4) cruise, 5) tactics, 6) cruise, 7) descend, 8) land, and 9) taxi and shutdown. |
| Functional Analysis | - The determination of equipment relationships to aircraft functions performed, and the interrelationships of these functions. |
| Functional Link | - The simplest form of functional relationship in which one function is dependent upon the next lower function. |
| Functional Path | - The compilation of functional links, in sequence, through which a function is identified as being dependent upon another. |
| Link Dependency | - The conditional probability of a dependent function failing, given that a particular function it is dependent upon has failed. |
| Provisory Condition | - Operation of an aircraft in a mode or environment such that the safety-related importance of certain equipments is increased. Provisory conditions include icing, night flight, supersonic flight, etc. |
| Provisory Factor | - The probability that a provisory condition exists. Also used to describe the coded notation used to indicate that a functional relationship is dependent on a particular provisory condition. |
| Safety Sensitivity | - Same as "sensitivity". |

Sensitivity

- A quantitative indication of the degree of safety degradation to be expected if a function or piece of equipment fails. The more specific terms are "functional sensitivity" or "equipment item sensitivity".

Sensitivity Path

- A particular sequence of functional dependencies (beginning at the top level in the hierarchical structure) through which a function or piece of equipment derives a sensitivity value. Equipment and functional sensitivity values are often derived through several such sensitivity paths.

FOREWORD

This document is part of a 16-volume report describing the application to specific aircraft types of ARINC Research Corporation's Flight Safety Prediction Technique (FSPT). The technique was developed under previous Air Force contracts (see Appendix A). The present effort, undertaken in 1972 under Contract F09603-72-A-1132-SA01, has led to further refinement of the FSPT through its broad application to many different types of aircraft. The flight safety models generated for these aircraft are presented in individual volumes of this report as follows:

<u>Volume</u>	<u>Aircraft</u>	<u>Volume</u>	<u>Aircraft</u>
2	T-38	10	B-52G, H
3	F-111A, FB-111A	11	C-130E
4	A-7D	12	KC-135
5	F-4D, E; and RF-4C	13	C-5A
6	C-141	14	T-39
7	A-37	15	F-15
8	O-2	16	UH-1N Helicopter
9	OV-10		

Volume 16 will document the results of a feasibility study of extending the FSPT to rotary-wing aircraft.

Volume 1, an overall summary of the contractual effort, will be issued at the end of the contract period.

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1

INTRODUCTION

The Flight Safety Prediction Technique developed by ARINC Research Corporation provides for assessment of the impact on flight safety of the failure of specific items of equipment within an aircraft. In the FSPT, mathematical modeling procedures are applied for processing aircraft-equipment failure data to yield a quantified index ranking safety-related problems on the basis of their likelihood of occurrence and the resulting degradation in the aircraft's capability to fly.

The ranking factor is called "criticality", which in its simplest form is the product of the failure probability and flight-safety sensitivity of an equipment. (A more detailed definition appears in Section 2 and Appendix B.) The failure probability inputs are from basic failure-data sources, AFM 66-1 and 65-110. The sensitivity estimates are derived by the following process:

- a. Systematic analysis of aircraft functions to determine those essential to flight safety
- b. Identification of the hardware required to perform these functions
- c. Evaluation of the safety significance of the hardware in performing these essential aircraft functions.

The criticality values resulting from this approach provide a relative ranking of all malfunctions with respect to their safety significance. Figure 1-1 is a simplified example of how three equipment items would be ranked on the combined basis of their failure probability and safety sensitivity. This figure illustrates an example in which item A has the highest failure probability, but due to the low sensitivity value is ranked below item B in criticality.

The methodology has the ability to rank malfunction problems currently and continuously by their accident potential. This ranking, based on criticality assessment, can provide the basic parameters necessary for:

- a. Identifying equipment items whose failure history and application pose a threat to aircraft safety
- b. Quantifying the degree of threat associated with each equipment item
- c. Evaluating and tracking the effectiveness of modifications to the aircraft
- d. Assessing safety benefits versus the cost of proposed aircraft modifications, changes in maintenance or flight operations, or alternative aircraft designs.

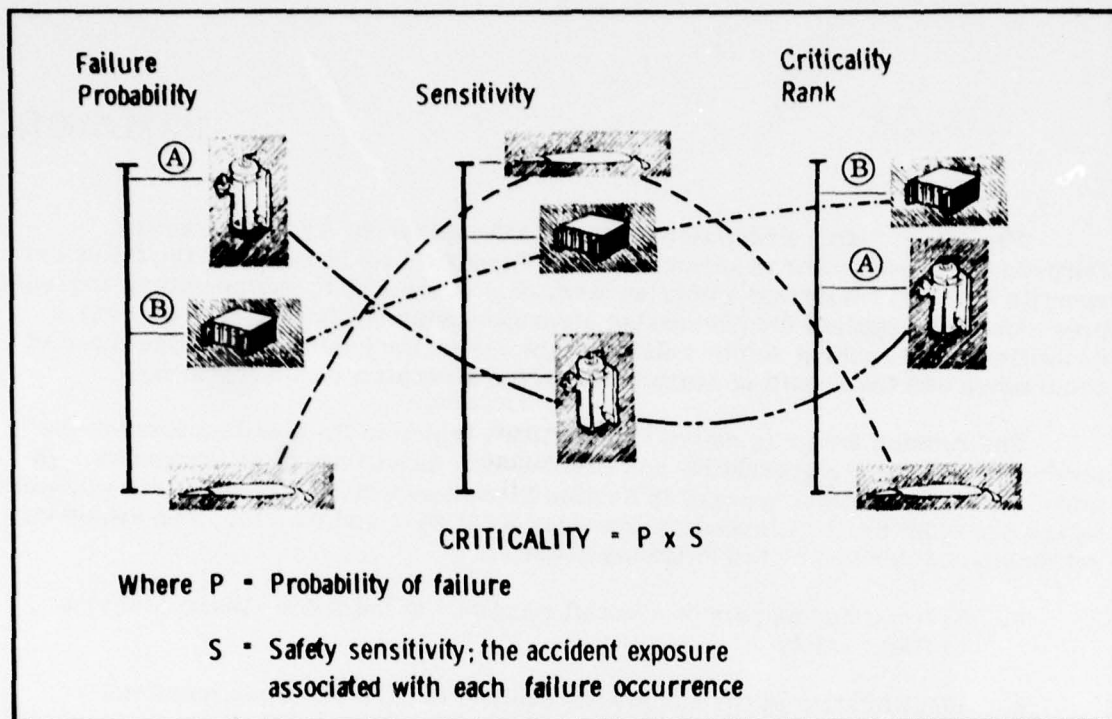


Figure 1-1. Example of Criticality Ranking Process

In this report, Section 4 and Appendix D pertain specifically to the T-39A aircraft. The remainder of the document provides support information that will make the T-39A data, and the method by which the data were obtained, more meaningful to the general reader.

Section 2 presents an overview of the development and utilization of the Flight Safety Prediction Technique; Section 3 discusses the steps associated with generating a safety model for calculating the safety criticality of various equipments of an aircraft; and Section 4 describes how the safety models for the T-39A aircraft were developed. Appendix A summarizes the contractual history of the development of the FSPT; Appendix B discusses mathematical considerations underlying the technique; Appendix C discusses FSPT documentation methods; and Appendix D presents functional relationship diagrams for a listing of keypunch cards that comprise the safety model documentation for the T-39A aircraft.

2

METHODOLOGY UNDERLYING FSPT

This section discusses the basic definitions and mathematical concepts associated with the Flight Safety Prediction Technique.

2.1 DEFINITION OF SAFE AIRCRAFT

To develop a relative measure of aircraft safety degradation resulting from specific equipment malfunctions, it is first necessary to define a "safe" aircraft. For purposes of the FSPT assessments, an aircraft is assumed to be in a safe condition if it is operating within its prescribed performance limits. Conversely, an aircraft operating (or about to operate) outside these limits is considered to be unsafe - in a condition where property damage and personal injury may result.

The safety prediction methodology does not attempt to assess the extent of possible personal injury or aircraft damage resulting from an unsafe condition. Neither does the concept consider ejection capability, parachutes, life rafts, etc., which do not make an aircraft safer per se but provide for the survivability of the aircrew when the aircraft is unsafe. Collision is also excluded from consideration because of the complexity of the interrelationships between pilot, aircraft equipment, ground surveillance, and traffic density.

2.2 MATHEMATICAL BASIS OF FSPT

The probability of an accident caused by the failure of an element can be expressed as the probability of the element failing multiplied by the conditional probability that the failure of the element will cause an accident. Stated in equation form:

$$P(A, j) = P(j)P(A|j) \quad (1)$$

where

$P(A, j)$ = Probability of an accident due to failure of just the j^{th} element*

$P(j)$ = Probability that element j fails

$P(A|j)$ = Probability of an accident given that the j^{th} element fails.

This equation reflects the basic relationships addressed in the FSPT where:

a. The criticality of the j^{th} element is an estimate of $P(A, j)$

b. The sensitivity of the j^{th} element is an estimate of $P(A|j)$

*In this and subsequent discussions, unless otherwise stated, expressions such as "failure of the j^{th} element" should be interpreted to mean: failure of only the j^{th} element, assuming all other elements are not failed.

Because an element's effect on safety may depend on the mission phase (see Section 3.2.1), the above model can be expanded to:

$$P(A, j) = \sum_{k=1}^N P_{j,k} P(A|j, k) \quad (2)$$

where

N = Number of mission phases

$P_{j,k}$ = Probability that the j^{th} element is failed in the k^{th} phase

$P(A|j, k)$ = The j^{th} element's sensitivity in the k^{th} phase.

To identify the importance of discrete elements to aircraft safety, a flight profile consisting of nine distinct phases was defined. The phases are discussed in Section 3.2.1.

To utilize equation 2, it was necessary to develop a method for obtaining the values of $P(A|j, k)$, the probability that a malfunction in element j during mission phase k will result in an accident. This method in turn requires the estimation of two parameters: the probability of accident if a major function is not available during each mission phase, and the dependence of the major function on subfunctions and elements during each such phase*. Each function and equipment item thus derives its sensitivity value from its relationship to the major function(s) dependent upon it.

2.3 SENSITIVITY ASSIGNMENTS

A great deal of information is available on the causes of aircraft accidents, but little exists from which to make the sensitivity assignments $[P(A|j)]$. These assignments are therefore largely subjective, based on the analyst's knowledge of the system and any information he may have on previous accident history. The sensitivity assignments are reviewed (and revised as necessary) by an Air Force/contractor team working on a particular model to ensure that consistent criteria have been followed. The team review and negotiation of sensitivity assignments is the mechanism by which the value becomes sufficiently objective for use with the model. This negotiation considers all of those top level functions as a group and reassigns sensitivity values as necessary to assure that the most objective proportionality is attained for the particular aircraft model. The same major-function sensitivity values are used for major functions on all aircraft models where configuration and mission profiles permit.

The development of criticality rankings for the various elements (j 's) is dependent upon the ability to quantify the failure probability $[P(j)]$ and the element sensitivity $[P(A|j)]$ for each element. Since the intent of the concept is to provide a relative safety ranking of all malfunctions, it is not necessary to develop absolute

*For a more detailed discussion of the mathematics of the FSPT, see Appendix B.

values for $P(A|j)$. If the sensitivity values developed are correct relative to each other, a proper criticality ranking will be established. It is intended that criticality be an index proportional to $P(A, j)$ and therefore provide the same relative rank ordering of elements. The major reasons for proportionality, rather than equality, are:

- a. The FSPT does not account for the effect of extraordinary pilot intervention to prevent an accident in case of equipment malfunction.
- b. Criticality quantification was limited in its treatment of simultaneous occurrence of independent, primary failures.
- c. Operational and malfunction data yield only a proportional estimate of the required information.

While strict proportionality cannot be mathematically proven, it is believed that the criticality rankings provide reasonable relative measures of equipment problem potential.

3 MODEL DEVELOPMENT

Figure 3-1 summarizes the approach to the assessment of flight-safety criticality of aircraft equipment. The first contractor activity is the identification of all functions the aircraft is expected to perform and the determination of their inter-relationships. Next, each functional relationship is documented; and then sensitivity assignments are made at the major functional levels (below these levels, link dependency values are estimated; see discussion, Section 3.2.2). This process is carried out until each work unit code associated with a major function has been identified with respect to the function performed and dependencies have been estimated. Computer processing calculates the safety sensitivity for each work unit coded item, combines these values with the operation and failure data input by the Air Force, and produces the equipment criticality ranking.

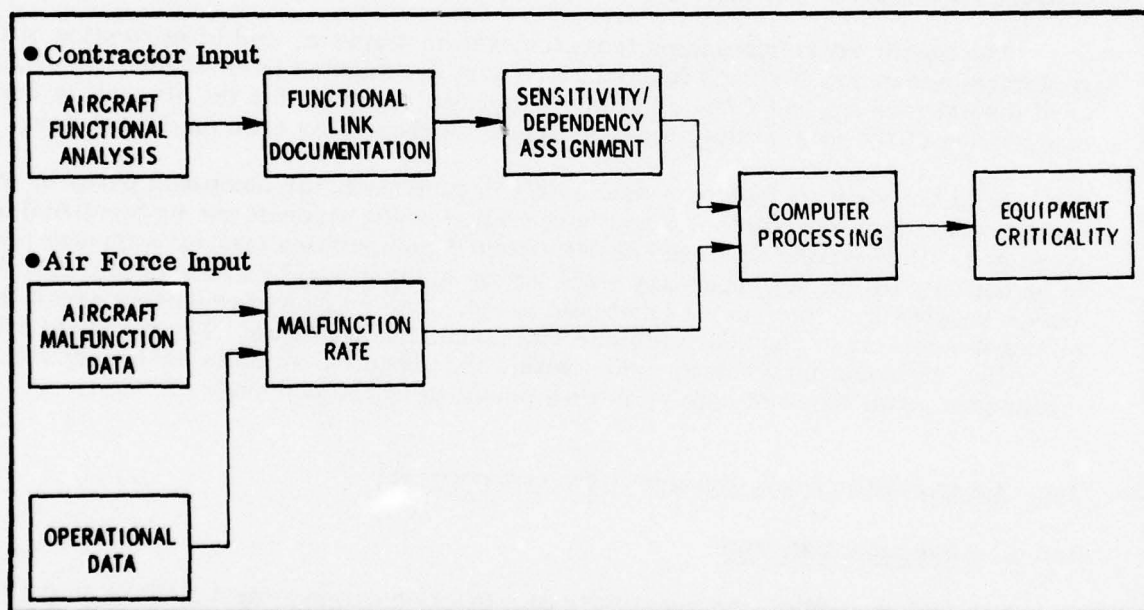


Figure 3-1. Activities and Data Inputs to Flight Safety Criticality Assessment

The steps in this process are discussed in greater detail in the following sections.

3.1 FUNCTIONAL ANALYSIS

Functional analysis entails the systematic identification of the relationships of hardware to the functions performed by the aircraft and documented in the aircraft technical orders. Tabulated for each aircraft function are the equipments necessary for its performance as well as all outputs required for other systems. The complexity of the functional interdependencies of an aircraft requires the use of a systematic

accounting procedure, as discussed below, to assure that all relationships have been identified and that no functional paths have been overlooked.

Certain top-level functions (comprised of both "primary" and "major" functions) have been defined as applicable to all aircraft types, and serve as the starting point for a safety analysis. Figure 3-2 lists these top level functions with the primary function of Flight Control expanded to show its typical major functions. Below the major function level, differences in aircraft types result in function identification and structuring specifically suited to each aircraft. In Figure 3-2, for instance, the major function Roll Control is subdivided into Left Roll and Right Roll, and further into aileron and spoiler actuation subfunctions. This structure is that applicable to an F-4 aircraft, in which ailerons have an extremely limited upward travel and lift is primarily lost through spoiler operation. Finally, each item in the aircraft WUC ("-06") manual is identified with respect to the function it performs. *

Every function and every WUC included in the model receives an "alpha designator" unique to that aircraft model. Due to the large number of alpha designators required in a model, an indenturing system is utilized to prevent duplication. However, the location in the hierarchical structure and the number of characters in the alpha designators are often independent, since such correlation is not necessary for subsequent computer processing.

The functional relationships from the system diagram, and identification of the equipment necessary for each function, are next documented in an 80-column punch-card format (see Appendix C). The total functional diagram for the aircraft is then a compilation of the system diagrams, with one punchcard for each functional link.

With the aircraft functions completely documented, the functional paths by which a piece of equipment contributes to the operation of the aircraft can be identified by computer. Performing the path-identification/documentation task by computer proves to be not only useful but necessary - the human analyst could neither keep track of nor assign sensitivity values to all functional paths. The machine processing capability allows the analyst to consider only one functional link at a time. The ability to follow all of the functional interrelationships within the aircraft, which is necessary for meaningful assessment of safety, is then provided by the computer.

3.2 MAJOR-FUNCTION SENSITIVITY ASSIGNMENT

3.2.1 Assignment Method

As stated earlier, the sensitivity of a function or equipment item is an estimate of the probability that its failure will cause an accident. From functional analysis of the aircraft under consideration, major functions are identified and are assigned sensitivity values for each phase of the mission.

*Certain WUC items in the "-06" manual may not be included in the safety model, these items being either 1) eliminated by TCTOs; 2) purely structural items in the 11000 series; 3) necessary only for survivability or ejection; 4) of lower indenture than the LRU level, where computer data screening eliminates failure reports.

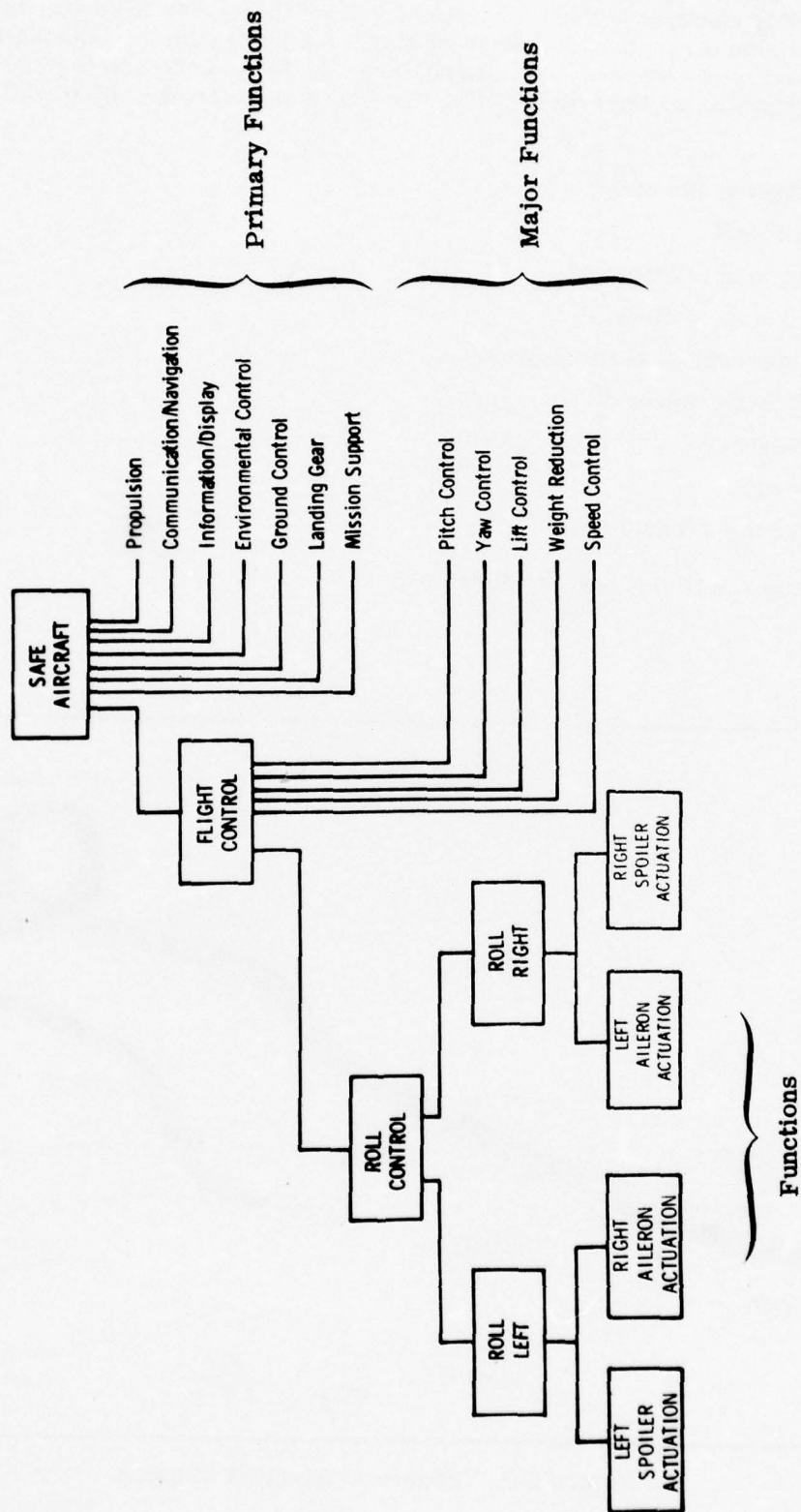


Figure 3-2. Hierarchical Structure of Aircraft Functions

The relative importance of primary functions, major functions, and functions is not necessarily constant throughout a flight. The failure, for example, of one engine of a multi-engine aircraft is far more critical on takeoff than it is during the rest of the flight, and is of relatively little importance during startup and taxi. To accommodate this variability of importance, the mission of an aircraft is divided into nine flight phases:

1. Startup and taxi
2. Takeoff
3. Ascend (climb-out)
4. Cruise, outbound
5. Intercept or tactical phase
6. Cruise, inbound
7. Descend
8. Land
9. Taxi and shutdown

These phases are illustrated in Figure 3-3.

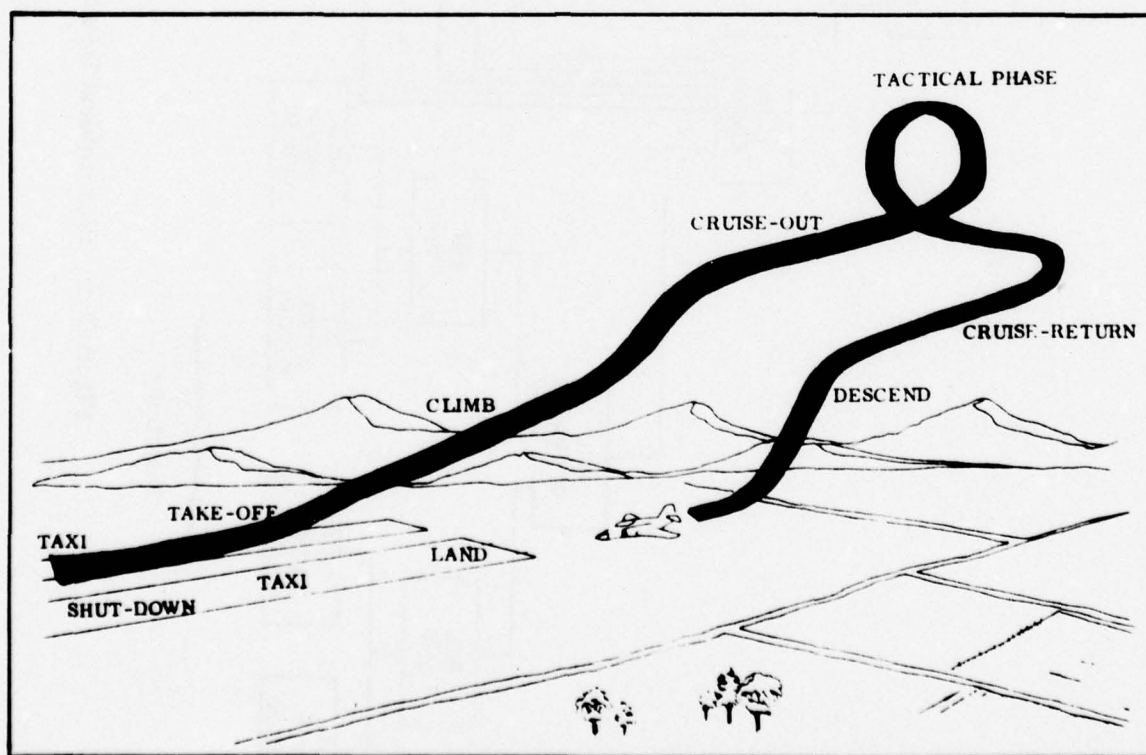


Figure 3-3. Phases of Aircraft Mission

A sensitivity value is assigned for each of the phases, and represents the best estimate of the likelihood that the aircraft will enter a hazardous mode if the function is not present in that phase. The numerical values assigned are proportional rather than absolute, and range from 0.0 to 1.0. The keypunch card format limits this assignment to increments of 0.1. Increments smaller than 0.1, when required, were assigned by defining a quasi-function for insertion between the major function and its dependent primary function.

3.2.2 Link Dependency Assignment

"Link dependency" is defined as the probability that the loss of a function will result in the loss of a dependent function. (For a more detailed discussion of this term, see Appendix B.) The assignment of link dependency values requires knowledge of the operation of specific aircraft because it is concerned only with functional levels below the "major" category. At this lower level, no evaluation is made of the impact on flight safety of the loss of functions. Instead, the effect of the loss of one function on the performance of another function becomes the evaluation criterion. Like sensitivities, link dependency values are assigned in increments of 0.1. Additionally, the method of attenuation used in assigning sensitivity values can also be applied to link dependencies.

3.2.3 Provisory Factors

The sensitivity of major functions with respect to aircraft safety, and at the lower levels the link dependency between functions, can be dependent on external influences and aircraft operating conditions. To accommodate these external influences, a set of provisory factors has been identified. An example would be a windshield anti-ice system, which has a safety sensitivity close to 1.0 during landing under icing conditions but a negligible effect on a dry, warm day.

Under such circumstances, the procedure is to assign the "worst case" value (assuming the condition exists). During model exercise the likelihood that the condition exists can be "read-in", thereby allowing the sensitivity value to be assigned by the computer based on the likelihood of the condition and the probability that the higher level function will therefore be lost. Table 3-1 lists the standard provisory factors used in FSPT models.

3.2.4 Computer Processing

Documentation of a flight safety analysis by ARINC Research thus consists of functional diagrams, coded functional tabulations, a functional data processing card deck, and a machine-prepared printout of the card deck data. Under this contract, the documentation is then sent to San Antonio Air Logistics Center for review by MMER personnel and representatives of the Air Logistics Center responsible for the particular aircraft (if other than SA/ALC).

SA/ALC processes the functional data card deck utilizing a number of computerized operations. First, a functional deck edit is accomplished to identify certain format or logic errors that may exist. Next, a path identification/documentation run is made that traces all possible paths associated with each function and calculates the numerical sensitivities by flight phase down to the WUC level. Then, a path combination run is made taking into account the dependence of more than one major function on a particular WUC. Finally, failure information from the 66-1 data system and numerical factors for provisory conditions are input and a WUC criticality list by rank order is generated by the computer.

TABLE 3-1. PROVISORY FACTOR CODES

Code	Provisory Condition
A	Icing conditions
B	Adverse speed/altitude operations (Helicopter)
C	Runway stopping distance/confined area (Helicopter)
D	Night operation
E	IFR conditions
F	Supersonic flight
G	Rain
H	Solo flight
I	Loss of function for which indication is provided
K	Normal system failed
T	Flame-out
X	Fire
Y	Cold weather
2	One of three available units is required
3	Two of three available units are required
4	One of four available units is required
5	Two of four available units are required
6	Three of four available units are required
8	Four of eight available units are required

An additional product generated by the computer is a two-part criticality trend analysis. Part I contains the criticality rankings and linear regression analysis by WUC for the previous 12 months. Part II contains plots of the criticalities and regression lines for the 25 WUCs top-ranked according to safety criticality.

3.2.5 Model Maintenance

Each time an aircraft type for which a safety model has been developed undergoes a modification, the effects of the changes on the model must be evaluated. Technical order and WUC revisions must be incorporated into the model. Removal of existing hardware, the installation of new hardware, or design improvements may change link dependencies and sensitivity assignments. The update procedure should follow the same general steps as outlined for the initial analysis effort.

Existing block diagrams and a printout of the functional card deck form the baseline for change identification. Functional relationships should be reviewed to determine the impact of changes on the documented safety analysis. Diagrams should be revised to reflect functional differences, WUC changes should be noted, and all differences listed on a flight-safety functional tabulation sheet. The functional deck printout can be used for manual indication of what the changes are and where they occur. New data cards are prepared and the functional deck updated by the removal of obsolete cards and the insertion of new cards. From this point on, the computer is again utilized to edit the functional deck, perform path identification/documentation, and calculate sensitivities for each WUC.

Block diagrams and other affected portions of the specific aircraft safety analysis report should be updated and revised pages issued that reflect these changes. Maintaining an accurate and updated model is important to obtaining an accurate assessment of the safety significance of hardware failures.

T-39A MODEL DEVELOPMENT

The FSPT model for the T-39A aircraft was begun in September 1975. The total aircraft documentation was submitted for "GO-95" computer edit at SA/ALC in August 1976.

The aircraft flight manual and maintenance technical orders provided the information on aircraft system operation. The model developed represents T-39A aircraft configured to the latest time compliance technical orders (TCTOs) documented in the manuals supplied by SA/ALC. Table 4-1 lists the manuals and their revision status applicable to the developed model. As noted in the table, two technical manuals (1T-39A-2-3 and 2-4) were not received in their entirety. However, SA/ALC supplied reproduction copies of applicable sections from the manuals which were used for model development. The reproduction copies are assumed to be the most recent revisions, which occurred during 1975.

TABLE 4-1. T-39A SYSTEM DOCUMENTATION

Nomenclature	Title	Revision/Date
1T-39A-1	Flight Manual	Change 1, 31 January 1975
1T-39A-2-3	Engines and Related System	Circa 1975*
1T-39A-2-3-1	Power Plant Ground Operation and Conditioning	Change 18, 2 June 1975
1T-39A-2-4	Flight Control and Hydraulically Operated Systems	Circa 1975*
1T-39A-2-5	Instruments and Electrical Systems	Change 17, 19 February 1974
1T-39A-2-6	Radio Communication and Navigation Systems	Change 21, 30 April 1975
1T-39A-06	Work Unit Code Manual	Basic, 1 April 1975
*See discussion, Section 4.		

Because of the vulnerability of the functional logic/sensitivity documentation to such errors as omission of links, duplication of cards, and incorrect keypunching, quality reviews were conducted at various critical points in the model development. In addition to keypunch verification, each card was checked against the functional link shown on the original rough draft and the final functional diagram and the diagrammed link was checked off. Missing or duplicated functional links were thus identified. Work unit codes used in the model were checked off against the WUC manual to assure completeness.

The quality reviews were first conducted prior to computer verification of the aircraft deck by SA/ALC. Following computer verification, a second quality review was performed by representatives of Warner Robins ALC and ARINC Research. Finally, the first criticality printout obtained from application of actual aircraft data was reviewed to identify any terms whose sensitivity appeared to be unreasonable. In such cases the paths were traced manually and changes made if an erroneous relationship was found.

Appendix C presents the methods and standard used in documenting an FSPT aircraft model. Appendix D presents the FSPT documentation for the T-39A aircraft.

APPENDIX A
HISTORICAL SUMMARY OF FSPT

HISTORICAL SUMMARY OF FSPT

In 1965, the desirability and practicability of quantifying the significance of specific equipment malfunctions relative to flight safety was explored in a feasibility study conducted by ARINC Research Corporation for the Air Force. The feasibility of a safety-quantification approach, which has subsequently become known as Flight Safety Prediction Technique (FSPT), was demonstrated; and the method was developed and refined in a series of studies, as follows:

<u>Study Phase</u>	<u>Subject/Date</u>	<u>Sponsor*/Publication No.</u>
I	Feasibility Study, September 1965 to June 1967 (Phase I)	Sacramento Air Materiel Area (SMNE), Contract AF09(603)62335, SM-37-2; publication 705-01-1-777
II-A	Technique Development, October 1967 to July 1968 (Phase II-A)	San Antonio Air Materiel Area (SANEW), Contract AF09(603)-67-A-0267-SA01; publication 734-01-1-895
II-B	Technique Development, July 1968 to July 1969 (Phase II-B)	San Antonio Air Materiel Area (SANEW), Contract F09(603)-68-A-0317-SA01; publication 754-01-1-985 (Revision 1)
	FSPT System Documentation for the F-4C and T-37 Aircraft, October 1970 to June 1971	San Antonio Air Materiel Area (MMER) Contract F41608-71-C-0576; publication 697-01-1-1118

In the Phase II-B study, the FSPT was applied to the F-106 aircraft. Concurrent with Phase II-B, the U.S. Naval Safety Center contracted ARINC Research to extend the methodology to produce a flight safety criticality model for the F-4J aircraft. The results of this effort are documented in ARINC Research Publication 753-01-3-982 (Revision 1).

In 1970, ARINC Research was contracted to develop suitable input data to permit the application of the technique to the T-37 and F-4C aircraft. These data were derived in the form of mathematical model functional documentation as input to the basic computer program developed and applied to the F-106.

In 1972, ARINC Research Corporation was awarded a contract, with the subsequent modifications in 1973 and 1974, to apply the Flight Safety Prediction Technique to 15 aircraft, working jointly with cognizant Air Logistics Centers. Aircraft to which the FSPT has been applied under this latter contract (F09603-72-A-1132-SA01) include:

- a. T-38
- b. F-111A and FB-111A

*The office symbols of Service Engineering at the Sacramento and San Antonio Air Materiel Areas are now SM/ALC/MME and SA/ALC/MME, respectively.

- c. A-7D
- d. F-4D, E; RF-4C
- e. C-141
- f. A-37
- g. O-2
- h. OV-10
- i. B-52G, H
- j. C-130E
- k. KC-135
- l. C-5A
- m. T-39
- n. F-15
- o. UH-1N Helicopter*

*Feasibility study of adaptation of FSPT to rotary-wing aircraft.

APPENDIX B
FORMULATION OF CRITICALITY-ASSESSMENT TECHNIQUE

FORMULATION OF CRITICALITY-ASSESSMENT TECHNIQUE

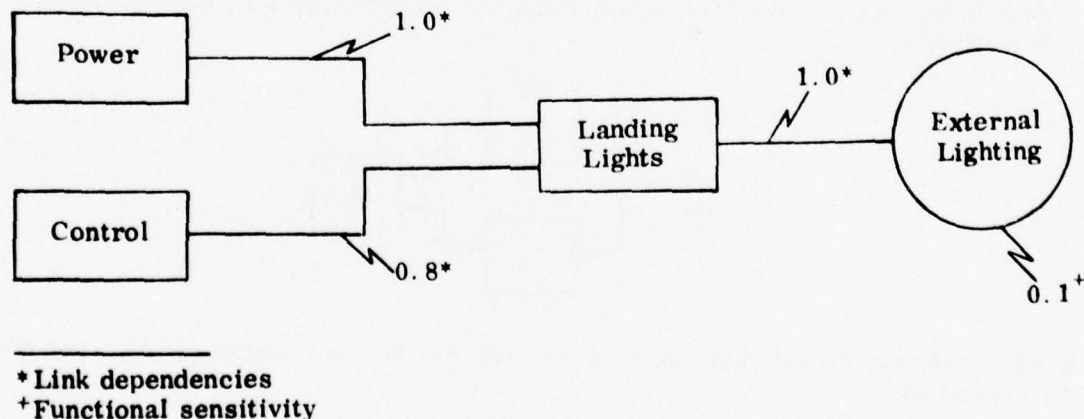
To implement the basic safety model defined in Section 2.2, it is necessary to develop a submodel for the probability that a malfunction in element j during mission phase k will result in an accident. This submodel in turn requires that we estimate two parameters: the probability of accident if a major function is not available during each mission phase, and the dependence of the major function on element j during each mission phase.

The first parameter is termed "functional sensitivity" and is estimated for each major function. The functional analysis performed in this task established for an aircraft the following hierarchal scheme:

Aircraft
Primary functions
Major functions
Function
Elements (Work Unit Codes)

A primary function would be one such as Flight Control. Major functions under Flight Control would include Pitch Control and Yaw Control.

The second parameter, "link dependency," is a vehicle for showing the influence of each functional-path element on the performance of a major function. For example, if the major function being considered is External Lighting, the following diagram illustrates the nature of functional sensitivity and link dependency values.

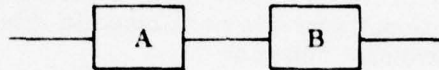


The 0.8 value means that failure of the Control function will result in loss of the Landing Light function 80% of the time. The 0.1 functional sensitivity value denotes that loss of external lighting will result in an accident 10% of the time. The values must be interpreted in a proportional sense, in that the actual accident probability is dependent upon external factors (see Section 3.2.3).

The remainder of this appendix discusses the procedures and model used to obtain element sensitivities; e.g., in the above example, the accident probability given that a Work Unit Code in the Control function malfunctions.

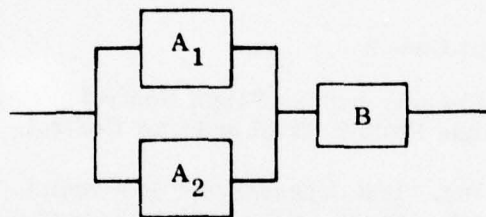
Three principal types of functional relationship--series, redundant, and parallel--were identified as representing the major forms to consider in modeling element sensitivity.

Series Relationship - A function having only one input. Schematically,



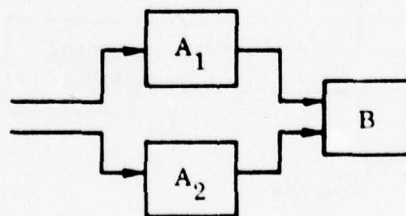
which indicates that outside of its own elements, the success of function B is only affected by the success of function A.

Functional Redundancy - A function having one or more backup functions that can provide the required inputs to successor functions. Schematically,



where A_1 and A_2 represent a functional redundancy in that either may provide the necessary input to B.

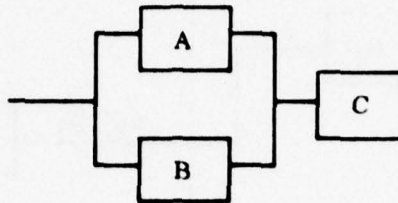
Parallel Functions - Two or more functions independent of each other in terms of functional success, but each of which may be required for a successor function. Schematically,



B will generally require both A_1 and A_2 ; but A_1 does not depend on A_2 , nor does A_2 depend on A_1 .

In some cases the distinction between functional redundancy and parallel paths is very slight, and may depend on mission phase. For example the four engines of a plane can be considered to be a redundant configuration providing inputs to the primary propulsion function during cruising, but would generally be considered to be parallel functions during takeoffs requiring full power.

In general, given a schematic relationship of the form,

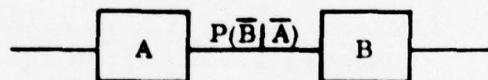


we can say that A and B are in a functionally redundant configuration if the success probability of C is the same if 1) A and B are successful, 2) A only is successful, or 3) B only is successful. If, for example, C is more likely to be successful if both A and B are successful, rather than A or B alone, then the relationship is one of parallel paths.

It is noted that the model will also account for element redundancy and parallel elements through inputs such as $P(\bar{A}|i_a)$, representing the probability that the Ath function fails given that the i_a^{th} element in A has failed. If i_a is a parallel element, the probability would depend on mission requirements and other parallel-element states.

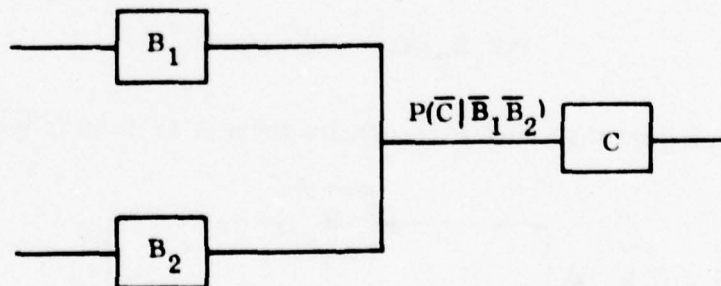
Link dependency is the conditional probability of a functional failure, given the failure of immediate predecessor functions. The link dependencies applicable to the three basic designs defined above are shown below.

Series Relationship

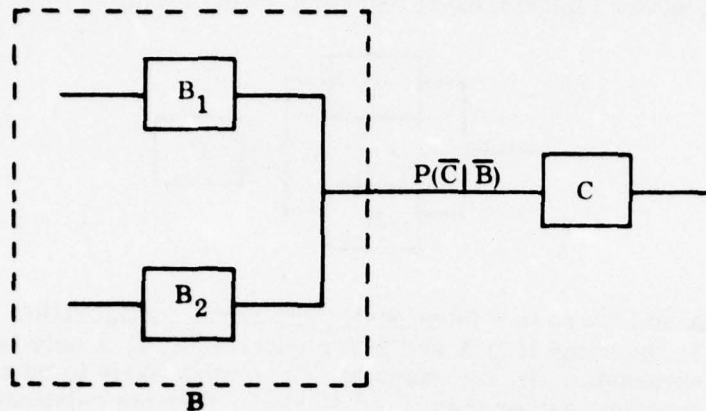


Link dependency = $P(\bar{B}|\bar{A})$ = probability that B fails given that A fails.

Functional Redundancy

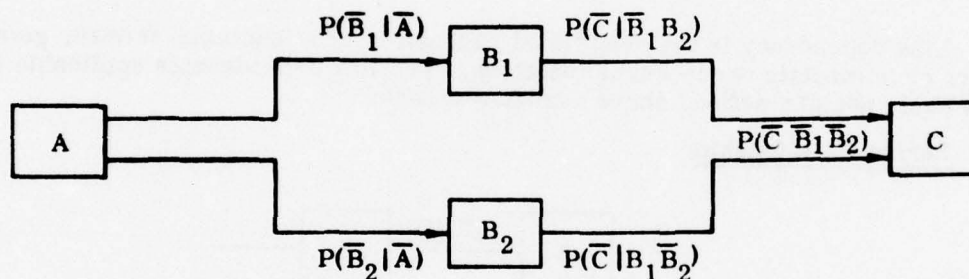


equivalent to



where $\bar{B} = \bar{B}_1 \bar{B}_2$

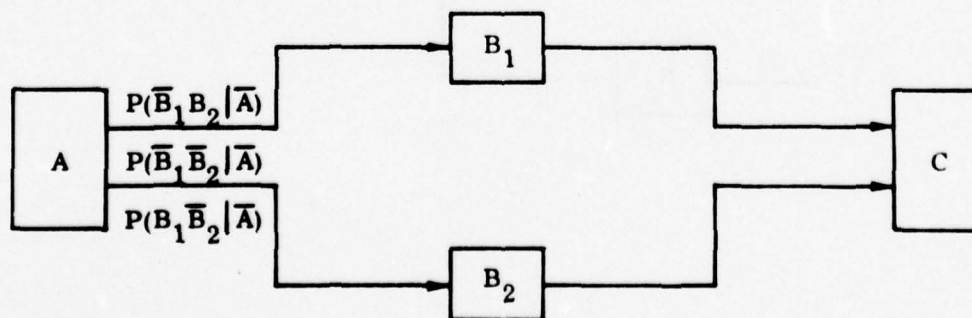
Parallel Functions



We shall generally assume that the dependencies of B_1 with respect to A , and of B_2 with respect to A , are independent of each other, so that

$$P(\bar{B}_1 \bar{B}_2 | \bar{A}) = P(\bar{B}_1 | \bar{A}) P(\bar{B}_2 | \bar{A})$$

We then can consider three link dependencies from A to B as follows:



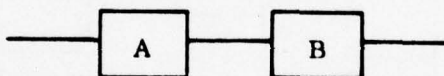
noting that

$$P(\bar{B}_1|\bar{A}) = P(\bar{B}_1 B_2|\bar{A}) + P(\bar{B}_1 \bar{B}_2|\bar{A})$$

$$P(\bar{B}_2|\bar{A}) = P(B_1 \bar{B}_2|\bar{A}) + P(\bar{B}_1 \bar{B}_2|\bar{A})$$

Models are shown below for determining the sensitivity of elements within a function for each of the three basic designs. The following basic assumptions apply:

- a. Except for cases where an element has a redundant or parallel counterpart or is located in a function with a redundant or parallel function, only the element under consideration shall be assumed to have failed initially. Thus the expression $P(A|i_a)$, representing the accident probability given failure of the i th Work Unit Code element, is based on the assumption that no other element has failed unless element i is in some redundant or parallel configuration. For cases in which there are redundant or parallel counterparts, failures of such counterpart elements or functions are considered in accordance with their occurrence probabilities.
- b. The success of all immediate predecessors ensures the success of a function, provided that the function experiences no element failures. Thus for the series function relationship



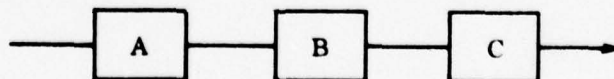
we assume

$$P(\bar{B}|A) = 0,$$

provided B experiences no element failures. If an element in function A is under consideration, the latter provision is always true by assumption "a."

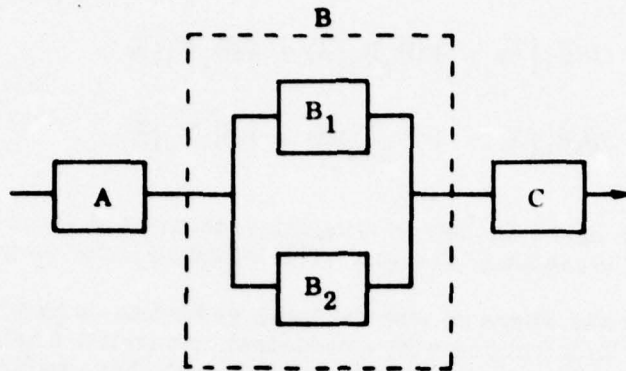
The element sensitivity models are:

Series Relationship



$$P(A|i_a) = P(\bar{A}|i_a)P(\bar{B}|\bar{A})P(\bar{C}|\bar{B})P(A|\bar{C})$$

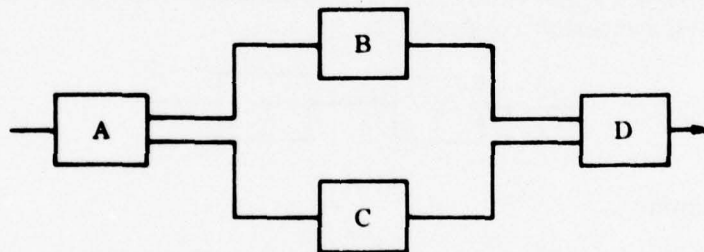
Functional Redundancy



$$P(\mathcal{M}|i_a) = P(\bar{A}|i_a)P(\bar{B}|\bar{A})P(\bar{C}|\bar{B})P(\mathcal{M}|\bar{C})$$

$$P(\mathcal{M}|i_{b1}) = P(\bar{B}_1|i_{b1})P(\bar{B}_2)P(\bar{C}|\bar{B})P(\mathcal{M}|\bar{C})$$

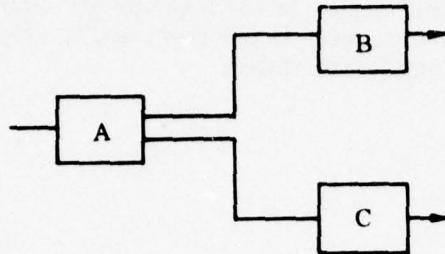
Parallel Functions



$$P(\mathcal{M}|i_a) = P(\bar{A}|i_a) \{ P(\bar{B}\bar{C}|\bar{A})P(\bar{D}|\bar{B}\bar{C}) + P(\bar{B}C|\bar{A})P(\bar{D}|\bar{B}C) \\ + P(\bar{B}\bar{C}|\bar{A})P(\bar{D}|\bar{B}\bar{C}) \} P(\mathcal{M}|\bar{D})$$

$$P(\mathcal{M}|i_b) = P(\bar{B}|i_b) \{ P(\bar{C}|i_b)P(\bar{D}|\bar{B}\bar{C}) + P(C|i_b)P(\bar{D}|\bar{B}C) \} P(\mathcal{M}|\bar{D})$$

A case not explicitly included in the above three basic functional relationships is one for which a function is in two paths, e.g.,



then

$$P(A|i_a) = P(\bar{C}|i_a)P(B|i_a)P(A|\bar{C}B) + P(C|i_a)P(\bar{B}|i_a)P(A|C\bar{B}) \\ + P(\bar{C}|i_a)P(\bar{B}|i_a)\{1 - P(A|\bar{C})P(A|\bar{B})\}$$

where it is assumed that the effects of loss of the major functions in accident occurrence are independent of each other.

Use of Numerical Provisory Factors for Partially Redundant Systems

The numerical provisory factors (see Table 3-1) are used where more than two identical functions are involved in a redundancy. For example, aircraft with more than two engines often have identical and independent systems for hydraulic pressurization, and for electrical power generation, one driven by each engine. If the aircraft can be operated safely with one or more of such systems in a failed state, one of the numeric codes is utilized in assigning link dependency values. Consider, for example, the following:

If N identical and independent units* are available and at least M are required for safe operation, where $0 < M < N$, then the provisory factor of a given unit, say U_j , is the probability that the failure of U_j will cause the aircraft to enter an unsafe state. This is the probability that exactly $M-1$ of the remaining $N-1$ units will be in an unfailed state. This probability can be calculated by the formula for the binomial distribution, and is given by

$$P(U_j) = \binom{N-1}{M-1} p^{(M-1)} q^{(N-M)}$$

where $P(U_j)$ = probability that failure of the j^{th} unit will cause the aircraft to enter an unsafe state, and

M = Number of units required

N = Number of units available

p = Probability that a single unit will be in an unfailed state

q = Probability that a single unit will be in a failed state or $(1-p)$

*Units may be either elements, element assemblies, or functions.

Assignment of link dependencies to N identical and independent units of which only M are required proceeds as follows. The value assigned to each unit is the dependency of the higher level function on receiving an output from M of the units (usually 1.0). The provisory factor is the appropriate numeric code. In the evaluation of the path sensitivity, the computer is programmed to select the binomial formula that corresponds to the provisory factor listed.

APPENDIX C
FSPT DOCUMENTATION METHODS

FSPT DOCUMENTATION METHODS

Because of the extreme complexity of aircraft, it is necessary to develop a computerized method to identify and document all possible paths associated with each function as well as to determine the safety sensitivity associated with each path. A computer routine has been devised that takes the data from the functional card deck and traces and documents all paths. For each WUC, it also computes the flight-phase sensitivities for each path in which the WUC is present. The resulting computer printout provides a combined functional path sensitivity.

C.1 ALPHA CODING

As each system of the aircraft is functionally diagrammed, the functional blocks are assigned an "alpha code". This code aids the analyst in the bookkeeping tasks of functional diagramming and provides the computer with an identification of the elements to be processed. For standardization among aircraft, nine top-level functions have been defined and each has been assigned an initial or first-alpha designator. Each block in the functional diagram carries the same initial alpha as the top level function. Subsequent letters added to the initial alpha uniquely identify each block.

The only restrictions placed on the assignment of alpha codes are that:

- a. All characters in a code must be a letter of the alphabet, and
- b. The maximum number of characters in one code is seven.

C.2 ALPHA CODING AND COMPUTER PROGRAM COMPATIBILITY

Additional rules for alpha coding required to obtain the desired results from computer processing include:

- a. When a WUC item operates in the same mode to perform more than one function, the same alpha code is used in each application.
- b. When a WUC item operates in a different mode to perform each of more than one function, a different alpha designator is assigned for each operating mode.

C.3 FUNCTIONAL TABULATION

The "Flight Safety Functional Tabulation" sheet is used to code the safety model for keypunching. The sheets are coded as follows (refer to Figure C-1) for an example).

- a. Columns 1 through 3. Used to identify the aircraft represented by the model. For certain aircraft modeled under this contract more than one model - designation series MDS - was included. For instance, a single functional deck was created for four MDSs of the F-4 aircraft. Cards with "F4~~Ø~~" in columns 1-3 were common to all aircraft. For example,

*~~Ø~~ = blank

when these cards are combined with those carrying "F4E" in columns 1-3, then it produces an F-4E FSPT model deck.

- b. Columns 4 through 31. Contain the title of the function or the WUC item.
- c. Columns 32 through 36. Contain the left-justified WUC number.
- d. Columns 37 and 38. Blank
- e. Columns 39 through 46. Contain the assigned alpha designator for the function and/or the WUC. Column 39 contains either an L or an R, or is blank. The L and R designate left and right for those instances when the function and/or WUC pertains to the left or right side of the aircraft.
- f. Columns 47 and 48. Blank.
- g. Columns 49 through 55. Normally left blank, but are used after a deck is operational to substitute the data on a card for that stored in the computer by punching the line record number in this field.
- h. Columns 56 through 63. Identify the dependent functions for either the function or specific WUCs being coded. Column 56 may contain L, R or blank for the same purpose as that of column 39.
- i. Column 64. Contains the alphanumeric code of the "provisory factor" applicable to the link value assigned.
- j. Columns 65 through 69. Contain the alpha designator of a function that is an alternate for the function being coded. (Column 65 is used for "L" or "R" as in Column 39.) The presence of the "alternate alpha" flags the importance of the link dependency as being affected by the success probability of the alternate function.
- k. Column 70. Contains the work unit code dependency value (1 = 0.10; 2 = 0.20; A = 1.0). This value is applicable to all flight phases.
- l. Column 71. Contains special instructions to the computer through the use of letters F, S, or being blank. Cards with an "S" or "blank" in column 71 are used in sensitivity computations. Cards with an "F" document a functional relationships which, although present in the system, would produce an erroneous sensitivity value when combined with other nonindependent paths (having the same function in common at some higher level). The "F" prevents the computer from including the link in the sensitivity calculations.
- m. Columns 72 through 80. Contain functional dependencies for each of nine flight phases as described in Section 3.2.1 of the text. Coding is the same as for column 70.

C.4 DIAGRAM CONSTRUCTION

The diagrams produced under the contract document the functional inter-relationship of the aircraft systems considered in the model. In the interest of extending the useful life of the diagrams, WUC items are not shown, thereby eliminating the necessity of updating the diagrams with each (and sometimes frequent) change to the WUC manual.

As discussed earlier in this report, the diagrams represent the hierarchal structure of the paths from which the sensitivity values are derived. The diagrams, although consistent with the system schematic and reliability block diagrams, are not equivalent due to this hierarchal method of documentation. In the actual system, signals and/or fluids pass from one component to the next and are thus documented in schematics; conversely, the hierarchal approach only identifies the components that must operate to achieve a given function, independent of the direction and/or sequence of signal flow. This approach directly addresses the system impact of a component failure without the necessity of identifying the intrasystem secondary failures. Each line connecting functions on the diagram is documented by a punchcard, with the lower function providing the "alpha designator" and the higher function's alpha designator indicator as the "dependent function".*

*The card deck also documents functional relationships not shown on the diagram; the work unit codes (mentioned earlier) and the "S" cards discussed in paragraph C.3.1.

APPENDIX D
FSPT DOCUMENTATION OF T-39A AIRCRAFT

FSPT DOCUMENTATION OF T-39A AIRCRAFT

This appendix contains the functional relationship diagrams and a listing of the keypunch cards that comprise the T-39A aircraft FSPT safety model documentation.

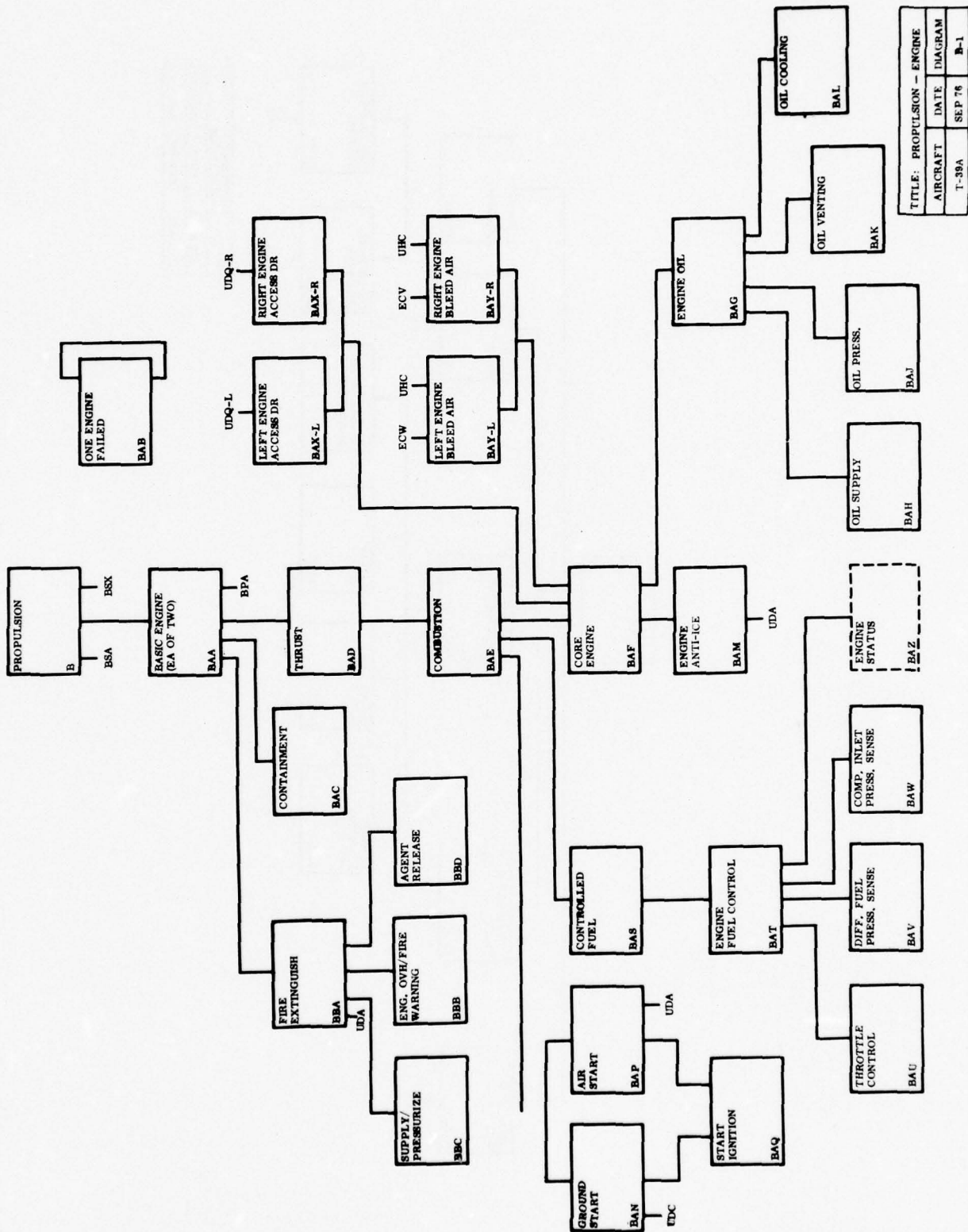
D.1 DIAGRAMS

The diagrams illustrating the functional relationships considered in the T-39A safety model will be found on pages D-5 through D-19, and are listed below:

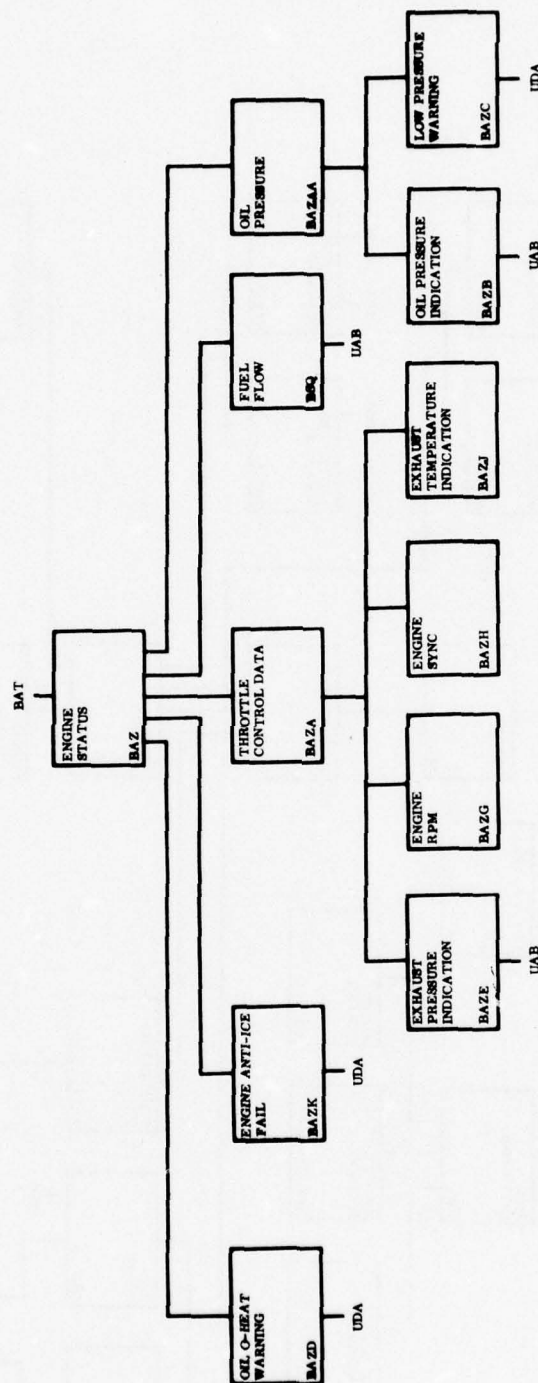
	<u>Diagram</u>	<u>Page</u>
Propulsion		
Propulsion/Engine	B-1	D-5
Propulsion/Engine Status	B-2	D-6
Propulsion/Fuel	B-3	D-7
Communications/Navigation/Identification		
Comm/Nav/Ident	C-1	D-8
En Route Aids	C-2	D-9
Information and Displays		
Info & Displays	D-1	D-10
Environmental Control		
Environmental Control	E-1	D-11
Environmental Control	E-2	D-12
Flight Control		
Flight Control	F-1	D-13
Yaw/Pitch Control	F-2	D-14
Ground Control	G-1	D-15
Mission Support	M-1	D-16
Landing Gear		
Landing Gear	N-1	D-17
Gear Retract	N-2	D-18
Utilities	U-1	D-19

D.2 CARD LISTING

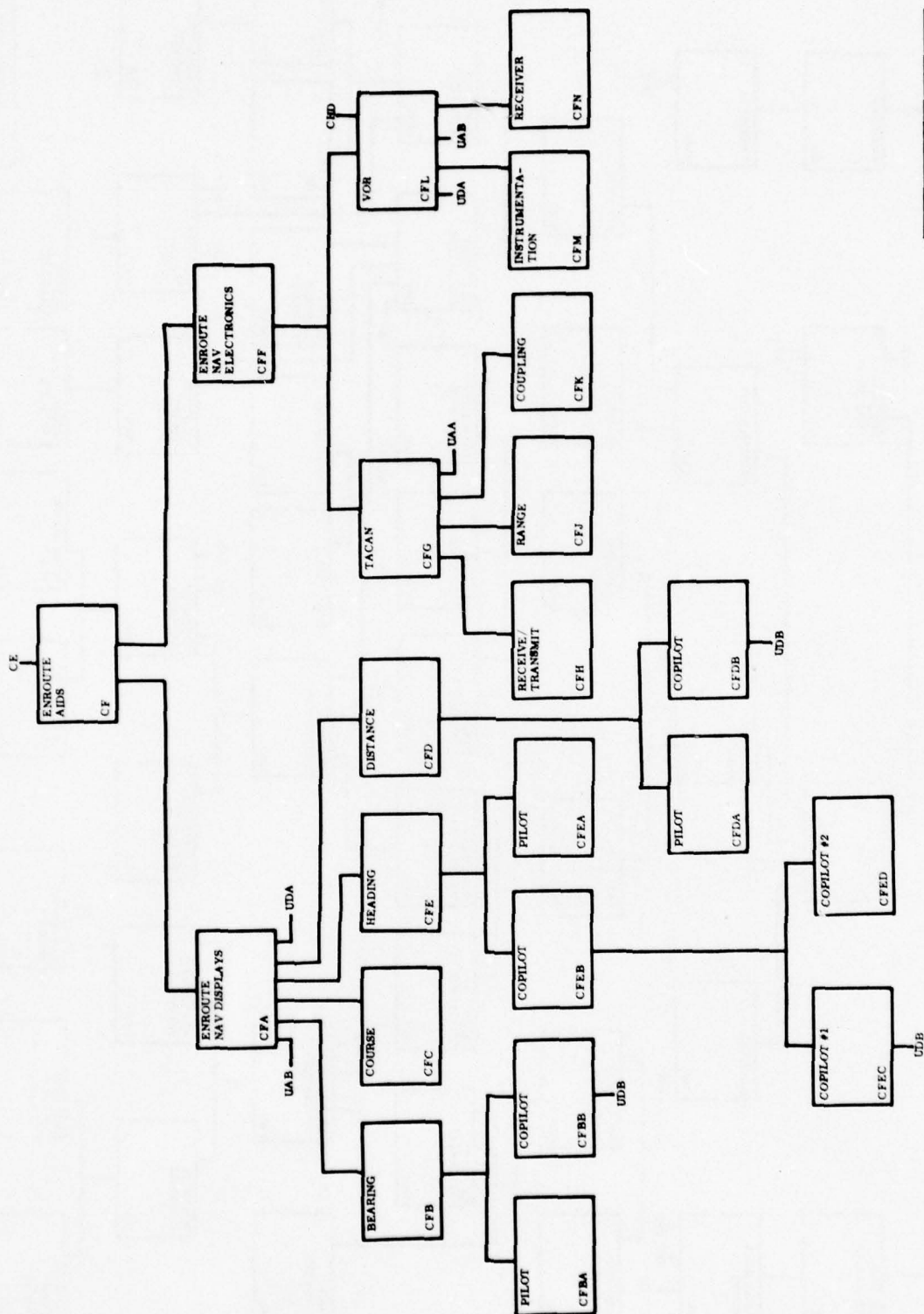
Pages D-21 through D-57 are a reproduction of the punchcard listing. The listing is alphabetical by "alpha designator", and the format is that of the 80-column punchcard itself as described in Appendix C. At the top of each page the card columns are printed vertically; for example, column 34 is printed "3".
4



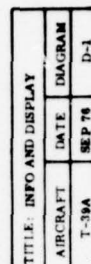
TITLE: PROPULSION - ENGINE		
AIRCRAFT	DATE	DIAGRAM
T-39A	SEP 76	B-1

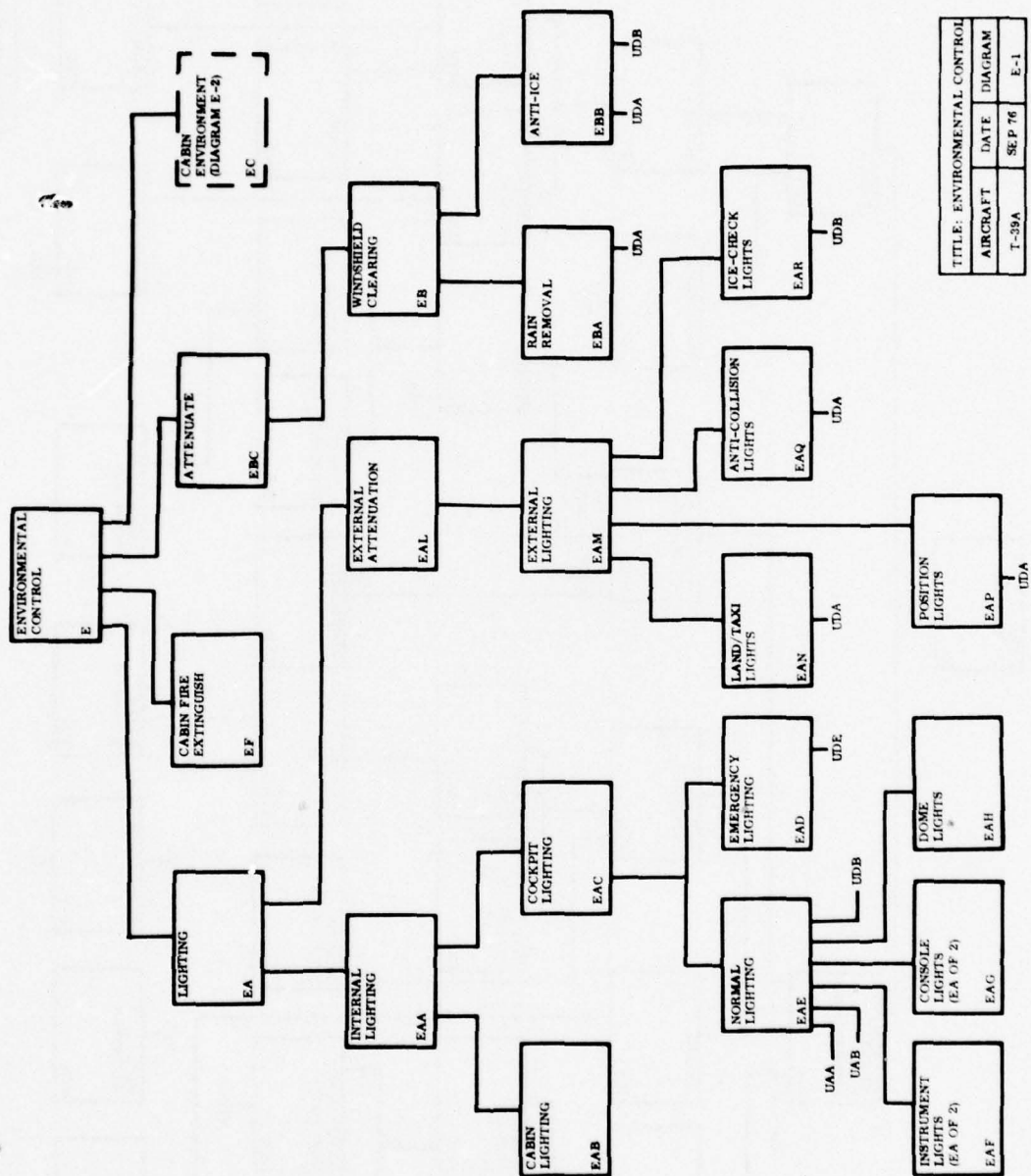


TITLE: PROPULSION - ENGINE STATUS			
AIRCRAFT	DATE	DIAGRAM	
T-38A	SEP 76	B-2	

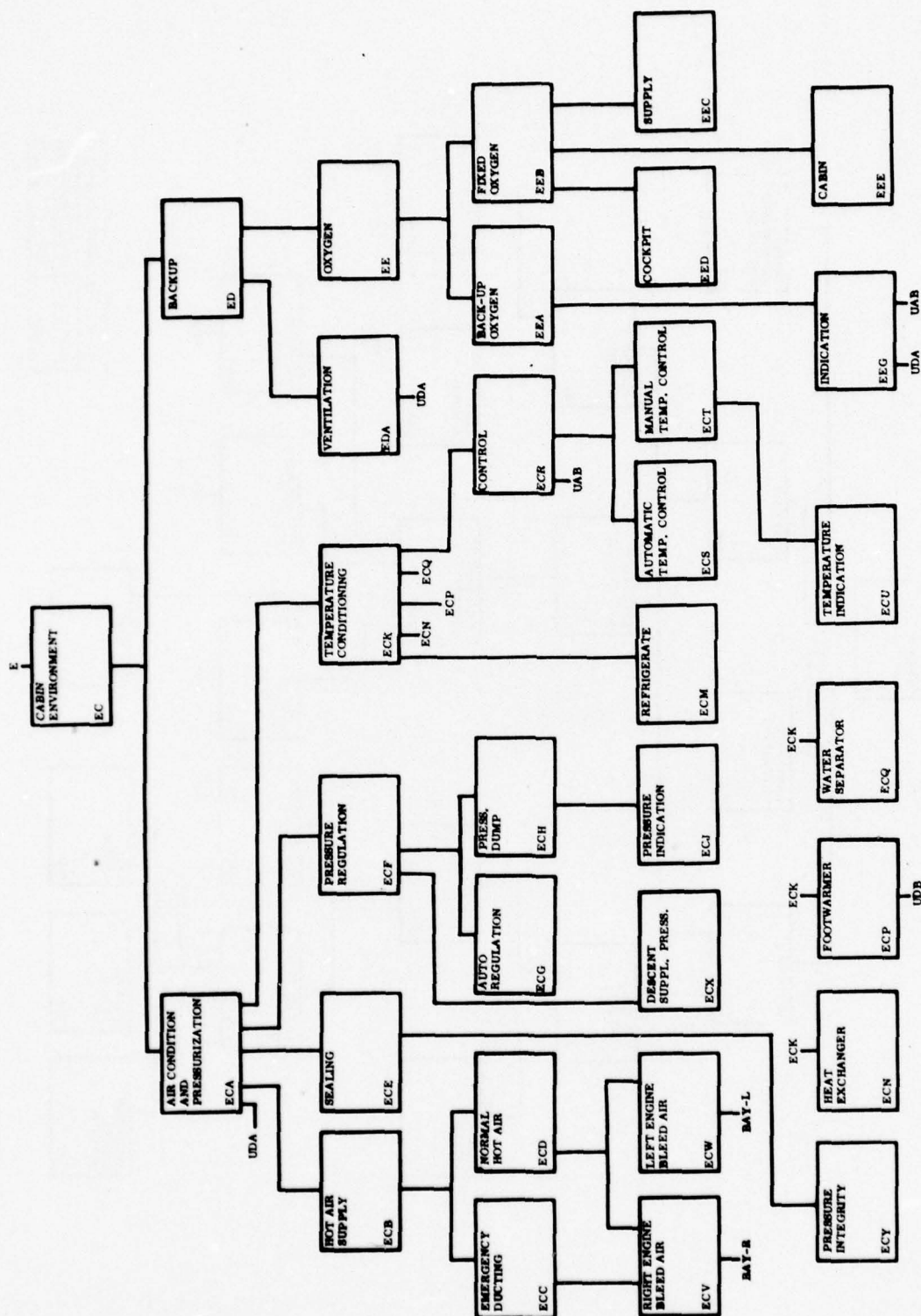


TITLE: COMM/NAV/IDENT			
AIRCRAFT	DATE	DIAGRAM	
T-39A	SEP 76	C-2	

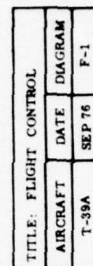


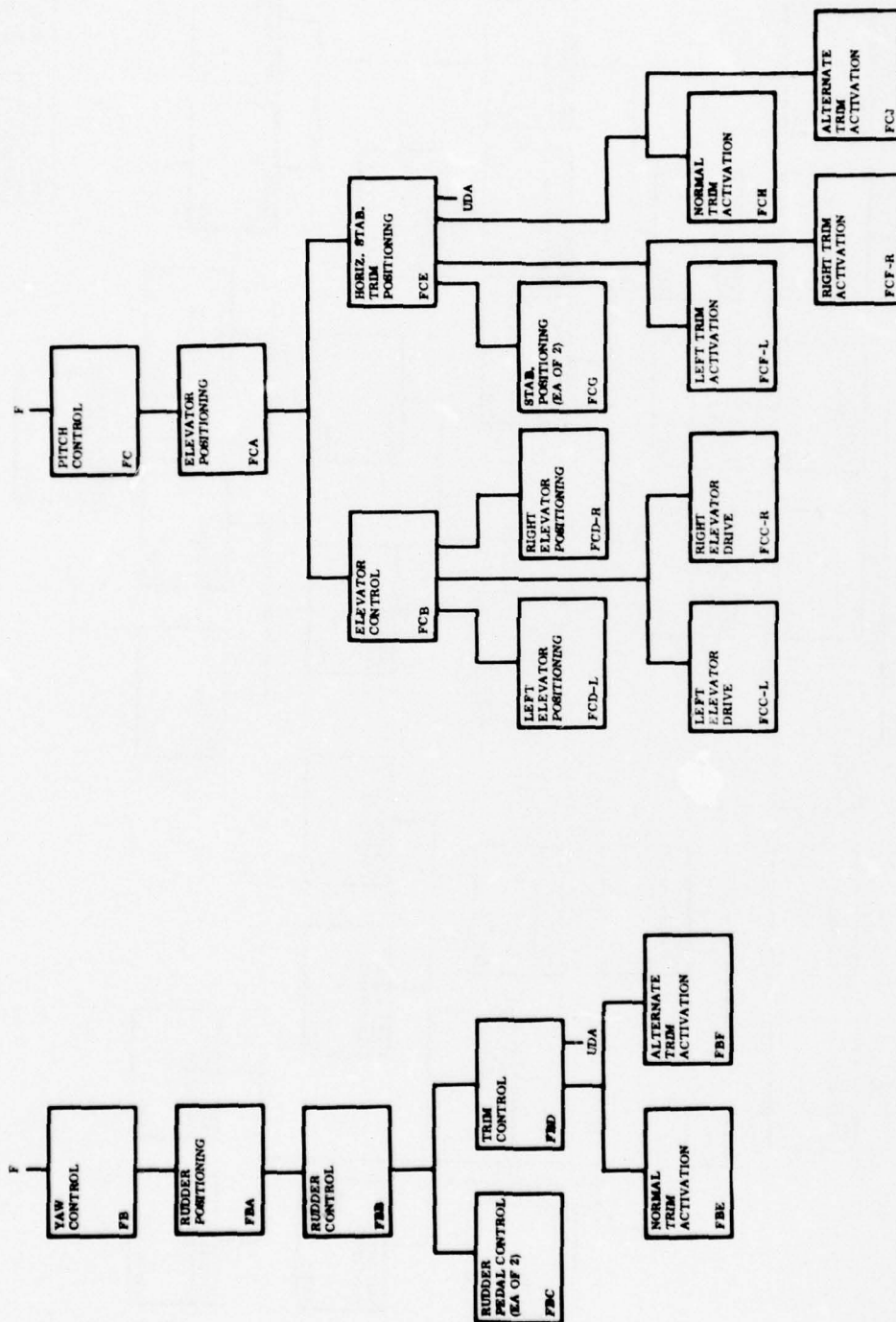


TITLE: ENVIRONMENTAL CONTROL			
AIRCRAFT	DATE	DIAGRAM	
T-39A	SEP 76	E-1	

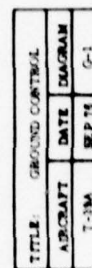


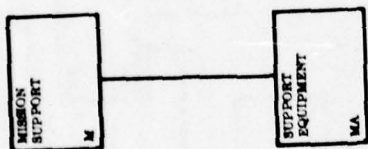
TITLE: ENVIRONMENTAL CONTROL			
AIRCRAFT	DATE	DIAGRAM	
T-39A	SEP 78	E-2	



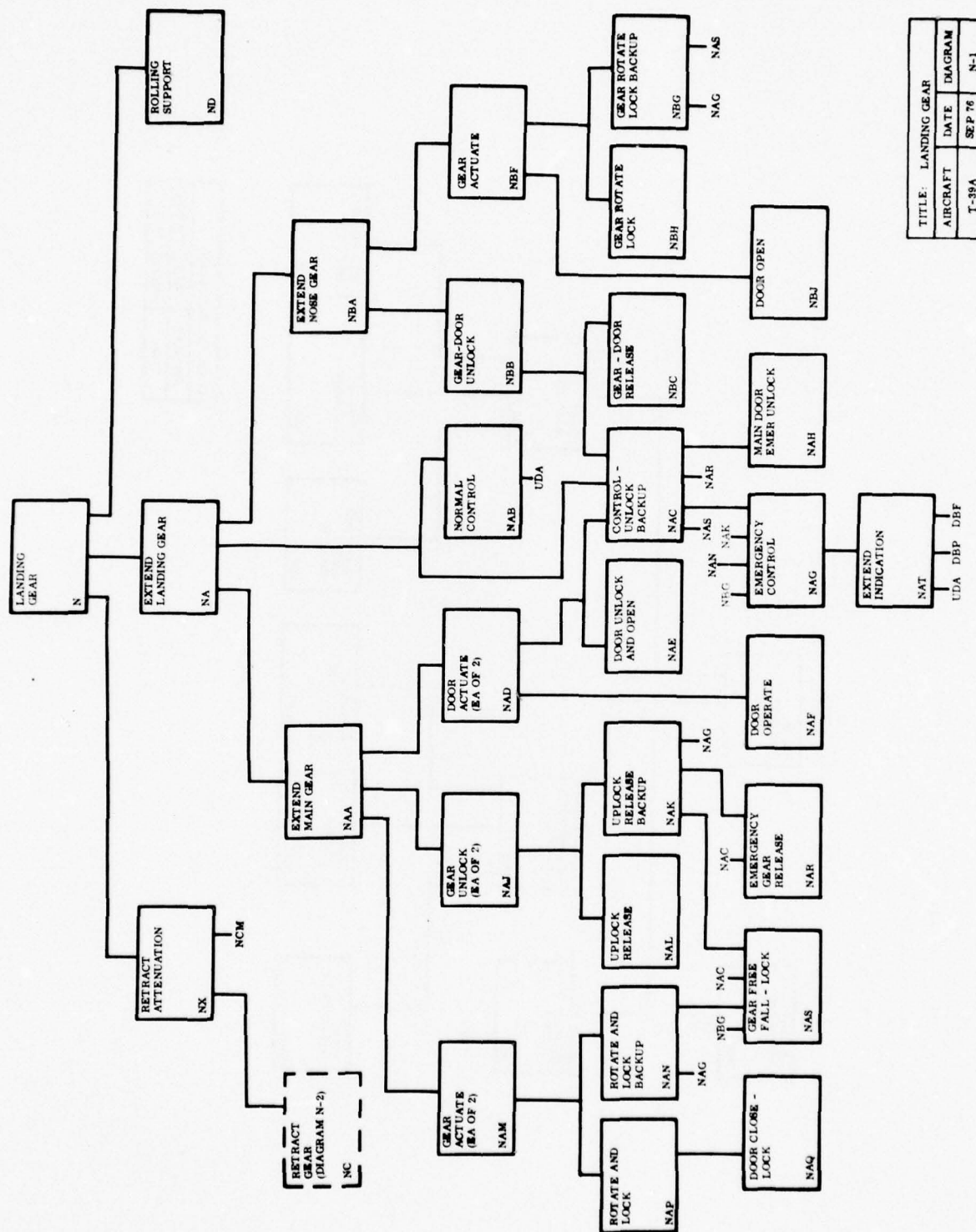


TITLE: FLIGHT CONTROL			
AIRCRAFT	DATE	DIAGRAM	
T-38A	SEP 76	F-2	

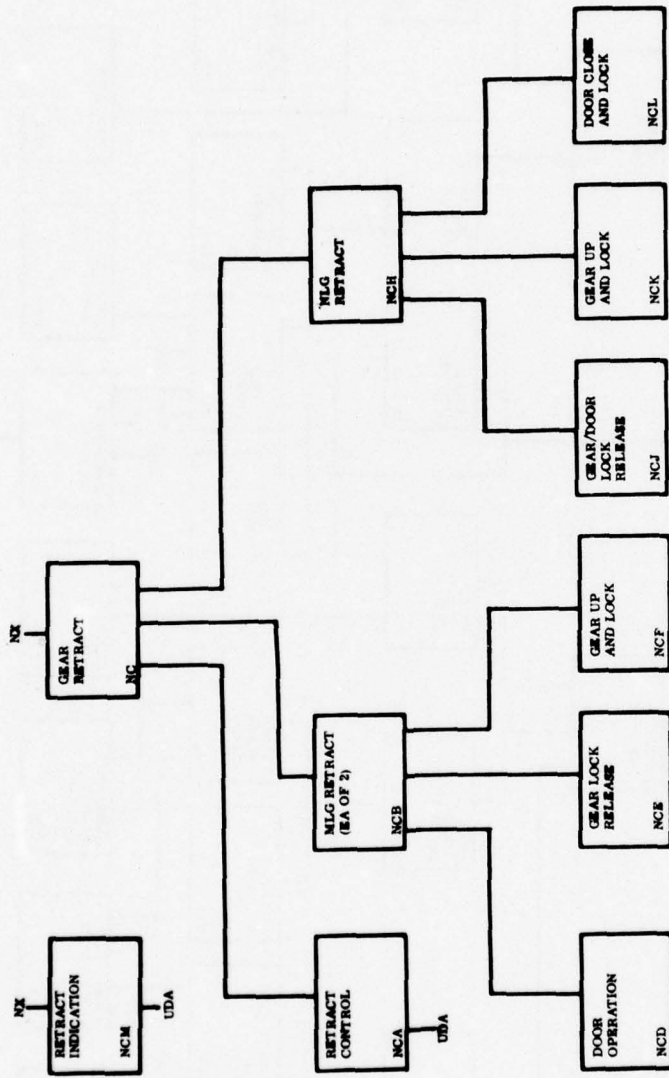




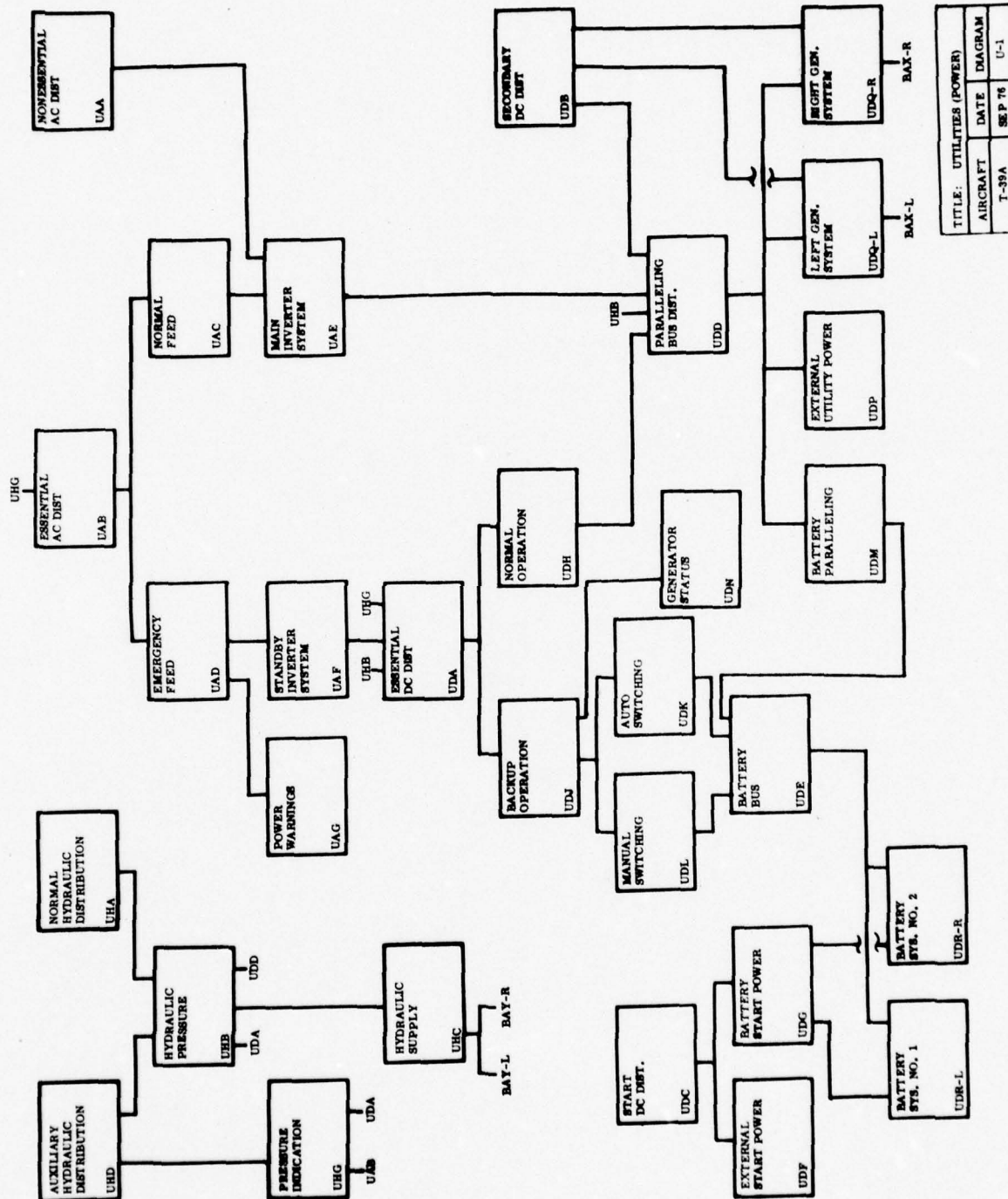
TITLE: MISSION SUPPORT			
AIRCRAFT	DATE	DIAGRAM	
T-39A	SEPT 6	M-1	



TITLE: LANDING GEAR			
AIRCRAFT	DATE	DIAGRAM	
T-39A	SEP 76	N-1	



TITLE: LANDING GEAR			
AIRCRAFT	DATE	DIAGRAM	
T-28A	SEP 78	N-2	



TITLE: UTILITIES (POWER)			
AIRCRAFT	DATE	DIAGRAM	
T-39A	SEP 76	U-1	

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PGG095.JIR1 DATE = 09/09/76

FLIGHT SAFETY PREDICTION TECHNIQUE

00000000011111111122222222333333333344444444445555555555666666666677777777778
1234567890123456789012345678901234567890123456789012345678901234567890

PGG095.JICC T-39

T39

1 T39

T39 PROPULSION		B		AAAAAAAAAA
T39 BASIC ENGINE, EA OF TWO		BAA	B	041111110
T39 BASIC ENGINE, EA OF TWO		BAA	B	OAAAAAAAAA
T39 BASIC ENGINE, EA OF TWO		BAA	BAB	SAAAAAAAAA
T39 ONE ENGINE FAILED		BAB	BAB	FAAAAAAAAA
T39 CONTAINMENT		BAC	BAA	AAAAAAAAAA
T39 FLEX MOUNT	2311A	BACA	BAC	A
T39 STEADY MOUNT	2311B	BACB	BAC	A
T39 DEFLECTOR	1161C	BACC	BAC	1
T39 TRUNNION MOUNT	1161H	BACD	BAC	1
T39 RETAINER	2311A	BACE	BAC	1
T39 SUPPORT	23115	BACF	BAC	1
T39 BRACKET	23116	BACG	BAC	1
T39 TRUNNION	23117	BACH	BAC	A
T39 TRUNNION SUPPORT	23118	BACJ	BAC	1
T39 SCOOP, RAM AIR	1161E	BACK	BAC	0
T39 DOOR, UPR, FWD, INBRD	11612	BACL	BAC	C
T39 DOOR, UPR, FWD, OUTBRD	11613	BACM	BAC	0
T39 DOOR, UPR, AFT	11614	BACN	BAC	0
T39 DOOR, LOWER	11615	BACP	BAC	0
T39 LATCH ASSY	11617	BACQ	BAC	0
T39 SKIN	11618	BACR	BAC	0
T39 SKIN	11632	BACS	BAC	0
T39 ACCESS DOOR	11633	BACT	BAC	0
T39 FRAME	11634	BACU	BAC	1
T39 THRUST		BAD	BAA	AAAAAAAAAA
T39 TAIL PIPE	23176	BADA	BAD	1
T39 TAIL PIPE CLAMP	23177	BADB	BAD	2
T39 COMBUSTION		BAE	BAD	AAAAAAAAAA
T39 CASE ASSY, COMB CHB, INNER	23AEA	BAEA	BAE	A
T39 CBR ASSY, COMB NO 1,5,7	23AEB	BAEB	BAE	A
T39 CBR ASSY, COMB NO 2,4,8	23AEC	BAEC	BAE	A
T39 CHB ASSY, COMB NO 3	23AED	BAED	BAE	A
T39 CHB ASSY, COMB NO 6	23AEE	BAEE	BAE	A
T39 CLAMP ASSY, CHB RETAINING	23AEF	BAFF	BAE	A
T39 CASE ASSY, COMB CHB, OUTER	23AEG	BAEG	BAE	A
T39 NUT ASSY, COMB CHB FIRESEAL	23AEH	BAEH	BAE	A
T39 FUEL DRAIN VALVE	2315C	BAEJ	BAE	1
T39 DUCT ASSY, COMB CHB OUTLET	23AFA	BAEK	BAE	5
T39 SUP ASSY, CHB OUTLET DUCT	23AFC	BAEL	BAE	5
T39 CORE ENGINE		BAF	BAE	AAAAAAAAAA
T39 CORE ENGINE		BAF	LBAX	FAAAAAAAAA
T39 CORE ENGINE		BAF	RBAX	FAAAAAAAAA
T39 CORE ENGINE		BAF	LBAY	FAAAAAAAAA
T39 CORE ENGINE		BAF	RBAY	FAAAAAAAAA
T39 COMP ROTOR/STATOR ASSY	23AAA	BAFA	BAF	8
T39 COMP INLET CASE	23AAE	BAFB	BAF	8
T39 BRG NO 1	23AAG	BAFC	BAF	A
T39 SEAL, NO 1 BRG	23AAH	BAFD	BAF	8

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T39 HOUSING, NO 1 BRG	23AAJ	BAFE	BAF	1
T39 VANE, COMP INLET	23AAL	BAFF	BAF	A
T39 VANE/SHROUD ASSY-1ST STA	23AAM	BAFG	BAF	8
T39 VANE/SHROUD ASSY-2ND STA	23AAN	BAFH	BAF	8
T39 VANE/SHROUD ASSY-3RD STA	23AAP	BAFJ	BAF	8
T39 PLATE, COMP VANE, INNER	23AAW	BAFK	BAF	A
T39 VANE, 1ST STA	23AAZ	BAFL	BAF	A
T39 FRONT HUB	23AAB	BAFM	BAF	8
T39 BLADE, 1ST STA	23ACD	BAFN	BAF	A
T39 BRG, COMP, REAR	23AC2	BAFQ	BAF	A
T39 SEAL ASSY, COMP RR BRG HSNG	23AC8	BAFR	BAF	8
T39 DIFFUSER CASE	23ADA	BAFS	BAF	A
T39 VANE AND SHROUD ASSY	23ADD	BAFT	BAF	8
T39 SHROUD ASSY, 1ST STA VANE	23AFB	BAFU	BAF	8
T39 CASE ASSY, TURBINE	23AFD	BAFV	BAF	8
T39 SEAL, TB ROTOR, 1STA, OUTER	23AFE	BAFW	BAF	8
T39 SPACER, TB ROTOR, 1STA SEAL	23AFG	BAFX	BAF	1
T39 SHROUD/SEAL ASSY, TB VANE	23AFH	BAFY	BAF	1
T39 SEAL, TB ROTOR, 2ND STA	23AFJ	BAFZ	BAF	8
T39 VANE, TB, 1ST STA	23AFM	BAFZA	BAF	A
T39 VANE, TB, 2ND STA	23AFN	BAFZB	BAF	A
T39 TURBINE ROTOR	23AFP	BAFZC	BAF	A
T39 SEAL ASSY, TB BRG	23AFQ	BAFZD	BAF	8
T39 SUPPORT, TB BRG SEAL	23AFS	BAFZE	BAF	1
T39 SHIELD ASSY, TB BRG, HEAT	23AFT	BAFZF	BAF	2
T39 DISK, 2ND STA TB	23AFW	BAFZG	BAF	8
T39 RING, RETAINING BRG IN RACE	23AF2	BAFZH	BAF	8
T39 BRG, TURBINE	23AF3	BAFZJ	BAF	A
T39 BLADE, TB, 1ST STA	23AF5	BAFZK	BAF	A
T39 BLADE, TB, 2ND STA	23AF6	BAFZL	BAF	A
T39 CASE ASSY, TB EXHAUST	23AF7	BAFZM	BAF	A
T39 CONE AND STRUT ASSY	23AF8	BAFZN	BAF	8
T39 NOSE GUIDE VANE	1161G	BAFZP	BAF	8
T39 AIR INLET DUCT & NOSE ASSY	11616	BAFZQ	BAF	2
T39 ENGINE OIL DISTRIBUTION		BAG	BAF	00AAAAA00
T39 TUBE-TURBINE BRG TRANSFER	23CAP	BAGA	BAG	8
T39 OIL SUPPLY		BAH	BAG	AAAAA0000
T39 MAIN OIL STRAINER	23CAH	BAHA	BAH	2
T39 SPT ASSY, OIL STRAINER	23CAC	BAHB	BAH	1
T39 OIL TANK ASSY	23CAE	BAHC	BAH	8
T39 TUBE ASSY, FR BRG-PUMP RTN	23CAH	BAHD	BAH	1
T39 TUBE ASSY, TB BRG EXT RTN	23CAJ	BAHE	BAH	1
T39 STRAINER ASSY, CMP RR BRG	23CAM	BAHF	BAH	1
T39 STRAINER ASSY, TB BRG	23CAN	BAHG	BAH	1
T39 STRAINER SCREEN GEARBX OIL	23AHP	BAHH	BAH	1
T39 OIL PRESSURIZATION		BAJ	BAG	AAAAA0000
T39 MAIN OIL PUMP	23CAA	BAJA	BAJ	A
T39 OIL PRESS RELIEF VALVE	23CAD	BAJB	BAJ	2
T39 MANF ASSY, PRESS MAIN BRG	23CAK	BAJC	BAJ	8
T39 NOZZLE ASSY, CMP RR BRG	23CAL	BAJD	BAJ	1

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T39 NOZZLE CMP FR BRG 23CAR BAJE HAJ 1
T39 SEAL, STARTER/GEN PAD 23AJ5 HAJF HAJ 1
T39 TUBE ASSY FRONT BEAR PRES 23CAG BAJG HAJ 1
T39 VENTING BAK BAG 000000000
T39 MANF ASSY, TANK BREATHER 23CB8 BAKA BAK 1
T39 MANF ASSY, BREATHER, EXT FR 23CFC BAKB BAK 1
T39 TUBE ASSY, CMP FR BRG BRTHR 23CRD BAKC BAK 1
T39 SEAL BREATHER SHAFT GEAR 23AJG BAKD BAK 0
T39 OIL COOLING BAL BAG 004888000
T39 FUEL OIL COOLER 23517 BALA HAL 8
T39 ENGINE ANTI-ICE BAM BAF A 888888888
T39 RELAY 23413 BAMA BAM A
T39 ENG INLET DE-ICE VALVE 23417 BAMB BAM A
T39 DUCT 23418 BAMC BAM A
T39 CIRCUIT BREAKER 42152 BAMD BAM 1
T39 GROUND START BAN BAE 000000000
T39 SHNG, START/GEN DR SHT BRG 23AHL BANA BAN 1
T39 SHAFT, STARTER/GEN DR 23AJ3 BANB BAN A
T39 SUPPORT ASSY, START/GEN BRG 23AJ7 BANC BAN 1
T39 COVER, START/GEN ACCESS DR 23AJ8 BAND BAN C
T39 STARTER BUTTON 23312 BANE BAN A
T39 STARTER-GENERATOR 42131 BANF BAN A
T39 RLY, GENERATOR, MONITOR 4217C BANG BAN A
T39 RLY, GENERATOR, FIELD CONTR 4217D BANH BAN A
T39 RLY, BATTERY START 4217I BANJ BAN A
T39 RLY, EXT PWR CUTOUT 42172 BANK BAN 0
T39 RELAY START CONTROLLER 4217J BANL BAN A
T39 CIRCUIT BREAKER 42152 BANM BAN 1
T39 AIR START BAP BAE T 00AAAAA00
T39 SW., AIR START 23313 BAPA BAP A
T39 RELAY 23314 BAPB BAP A
T39 CIRCUIT BREAKER 42152 BAPC BAP 1
T39 START/IGNITION BAQ BAN A00000000
T39 START IGNITION BAQ BAP 0AAAAA00
T39 EXCITER, IGNITION 23FAB BAQA BAQ A
T39 CABLE, ELEC PWR, EXC-IGN 23FAC BAQB BAQ A
T39 IGNITER PLUG #4EAC 23FAD BAQC BAQ 2
T39 CABLE, BROND, AIRFRAME/ENG 23FAE BAQD BAQ A
T39 SW., ENGINE MASTER 23131 BAQE BAQ A
T39 SW., FUEL-IGNITION 23311 BAQF BAQ A
T39 LIGHT INDICATOR 23318 BAQG BAQ 0
T39 CIRCUIT BREAKER 23132 BAQH BAQ A
T39 CABLE ASSY PN 10 166435 23123 BAQJ BAQ 8
T39 CONTROLLED FUEL BAS BAE AAAAAA000
T39 MANIFOLD ASSY, FUEL 23BAK BASA BAS A
T39 NOZZLE ASSY, FUEL METERING 23BAN BASB BAS 2
T39 CONNECTOR, PRESS VALVE UNK 23BAP BASC BAS 0
T39 TUBE, XFER, PRESS VALVE 23BAQ BASD BAS 2
T39 TUBE ASSY, FUEL SIGNAL 23BAT BASE BAS A
T39 DRAIN MANIFOLD 2311F BASF BAS 0

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 DIAPHRAGM 23112 BASG BAS 3
T39 DIAPHRAGM SEAL 23113 BASH BAS 3
T39 FUEL PRESS & DUMP VALVE 23BAR BASJ BAS 8
T39 VALVE ASSY,FUEL CHECK 23BAS BASK BAS 0
T39 ENGINE FUEL CONTROL 23BAT BAT BAS AAAAAA
T39 FUEL CONTROL&ALT 23BARC BATA BAT 5
T39 FILTER SCREEN & SPRT ASSY 23BAD BATB BAT 1
T39 BLEED ACTUATOR ASSY 23BAE BATC BAT 3
T39 POWER LEVER X-SHAFT ASSY 23BAF BATD BAT 8
T39 SUPPORT,X-SHAFT 23BAG BATE BAT 1
T39 ARM/LEVER,X-SHAFT 23BAJ BATF BAT A
T39 GEARSHAFT,FUEL CONTR DR 23AJC BATJ BAT A
T39 BOSS ASSY,FUEL CONTROL 23AJE BATK BAT 5
T39 THROTTLE CONTROL 23BAU BAT AAAAAA
T39 QUADRANT ASSY 23221 BAUA BAU 8
T39 FRICTION LOCK 23222 BAUB BAU 1
T39 ROD ASSY 23226 BAUC BAU 8
T39 ROD ASSY,LH 23227 BAUD BAU 8
T39 ROD ASSY,RH 23228 BAUE BAU 8
T39 TELESCOPIC UNIT 2322C BAUF BAU 8
T39 TELEFLEX CABLE 2322A BAUG BAU A
T39 DIFFUSER PRESS SENSE 23BAV BAT AAAAAA
T39 PROBE,FUEL CONT PRESS SENS 23ADJ BAVA RAV A
T39 TUBE ASSY,DIFF PRESS SENS 23BAU RAVB BAV A
T39 COMP INLET PRESS SENSE 23BAW BAT AAAAAA
T39 PROBE ASSY,COMP IN PRESS 23AAK BAWA BAW A
T39 TUBE ASSY,COMP IN PRESS 23RAV BAWB BAW 8
T39 LEFT ENG ACCESS DR LBAX RPF8 SAAAAA
T39 LEFT ENG ACCESS DR LBAX LUDQ AAAAAA
T39 RIGHT ENG ACCESS DR RBAX RUDQ AAAAAA
T39 CPL,GEAR BOX DR SHAFT 23AGB LBAXA LBAX A
T39 CPL,GEAR BOX DR SHAFT 23AGB RBAXA RBAX A
T39 SPACER,UPR BRG SLEEVE,IN 23AGD LBAXR LBAX 1
T39 SPACER,UPR BRG SLEEVE,IN 23AGD RBAXB RBAX 1
T39 GEAR BOX 23AHA LBAXC LBAX 8
T39 GEAR BOX 23AHA RBAXC RBAX 8
T39 PLUG,DR SHAFT 23AHC LBAXD LBAX 0
T39 PLUG,DR SHAFT 23AHC RBAXD RBAX 0
T39 ADPTR,GEAR BOX-POSN BOSS 23AHD LBAXE LBAX 0
T39 ADPTR,GEAR BOX-POSN BOSS 23AHD RBAXE RBAX 0
T39 HSG ASSY,DR GEARBOX 23AHG LBAXF LBAX 1
T39 HSG ASSY,DR GEARBOX 23AHG RBAXF RBAX 1
T39 COVER,ENG ACCESS DR 23AJN LBAXG LBAX 1
T39 COVER,ENG ACCESS DR 23AJN RBAXG RBAX 1
T39 GEAR MAIN COMP DRIVE 23ACW LBAXH LBAX A
T39 GEAR MAIN COMP DRIVE 23ACW RBAXH RBAX A
T39 LEFT ENG BLEED AIR DISTR LBAY ECW AAAAAA
T39 LEFT ENG BLEED AIR DISTR LBAY UHC 11111111
T39 RIGHT ENG BLEED AIR DISTR RBAY ECV AAAAAA
T39 RIGHT ENG BLEED AIR DISTR RBAY UMC 11111111

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 BLEED VALVE & LINKAGE 23DAA LBAYA LBAY A
T39 BLEED VALVE & LINKAGE 23DAA RBAYA RBAY A
T39 STRAP ASSY,COMPRESSOR 23DAB LBAYB LBAY 8
T39 STRAP ASSY,COMPRESSOR 23DAH RBAYB RBAY 8
T39 CONNECT LINK,BLEED VALVE 23DAC LBAYC LBAY A
T39 CONNECT LINK,BLEED VALVE 23DAC RBAYC RBAY A
T39 ARM,AIR BLEED VALVE 23DAH LBAYD LBAY A
T39 ARM,AIR BLEED VALVE 23DAH RBAYD RBAY A
T39 ROD,VALVE LINKAGE 23DAL LBAYE LBAY A
T39 ROD,VALVE LINKAGE 23DAL RBAYE RBAY A
T39 ENGINE STATUS BAZ BAT AAAAAA4AA
T39 THROTTLE CONTROL DATA ATTN BAZA BAZ 111111111
T39 OIL PRESSURE BAZAA BAZ I BAG AAAAAA4AA
T39 OIL PRESS INDICATION BAZB BAZAA 111111111
T39 INDICATOR,OIL PRESSURE 51441 BAZBA BAZB A
T39 XMITTER,OIL PRESSURE 51442 BAZBB BAZB A
T39 CIRCUIT BREAKER 42231 BAZBC BAZB 1
T39 LOW PRESS WARNING BAZC BAZAA 111111111
T39 SW.,OIL PRESSURE 51443 BAZCA BAZC A
T39 LIGHT PANEL 44241 BAZCB BAZC 1
T39 LIGHT,MASTER 44242 BAZCC BAZC 1
T39 LIGHT,INDICATOR 44243 BAZCD BAZC 2
T39 RELAY,TEST 44244 BAZCE BAZC 0
T39 CIRCUIT BREAKER 42152 BAZCF BAZC 1
T39 OIL OVERHEAT WARNING BAZD BAZ I BAL 111111111
T39 BULB,OIL TEMP 51426 BAZDA BAZD A
T39 LIGHT PANEL 44241 BAZDB BAZD 1
T39 LIGHT,MASTER 44242 BAZDC BAZD 1
T39 LIGHT,INDICATOR 44243 BAZDD BAZD 2
T39 RELAY,TEST 44244 BAZDE BAZD 0
T39 CIRCUIT BREAKER 42152 BAZDF BAZD 1
T39 EXHAUST PRESS IND BAZE BAZA 032222222
T39 INDICATOR,EXHAUST PRESS 51431 BAZE A
T39 XMITTER,EXHAUST PRESS 51432 BAZB BAZB A
T39 MANIFOLD ASSY,UPPER LEFT 23HAA BAZEC BAZE 5
T39 MANIFOLD ASSY,LOWER LEFT 23HAB BAZED BAZE 5
T39 MANIFOLD ASSY,LOWER RIGHT 23HAC BAZEE BAZE 5
T39 MANIFOLD ASSY,UPPER RIGHT 23HAD BAZEF BAZE 5
T39 CIRCUIT BREAKER 42231 BAZEG BAZE 1
T39 ENGINE RPM BAZG BAZA 111111111
T39 INDICATOR,TACHOMETER 51411 BAZGA BAZG A
T39 GENERATOR,TACHOMETER 51412 BAZGB BAZG A
T39 GEARSHIFT TACH DRIVE 23AJR BAZGC BAZG 8
T39 SEAL TACH DRIVE 23AJV BAZGD BAZG 1
T39 ENGINE SYNC BAZH BAZA 000000000
T39 SYNCHROSCOPE 51413 BAZHA BAZH A
T39 EXHAUST GAS TEMP INDICATION BAZJ BAZA 111111111
T39 INDICATOR,EXHAUST TEMP 51421 BAZJA BAZJ A
T39 EXHAUST TEMP RES SPOOL 51422 BAZJB BAZJ A
T39 THERMOCOUPLE 23GAA BAZJC BAZJ A

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T39 CABLE ASSY,THERMOCOUPLE 23GAH BAZJD BAZJ 1
T39 ENGINE ANTI-ICE FAIL BAZK BAZ K BAM 333333333
T39 RELAY 23413 BAZKA BAZK A
T39 LIGHT PANEL 44241 BAZKB BAZK 1
T39 LIGHT MASTER 44242 BAZKC BAZK 1
T39 LIGHT INDICATOR 44243 BAZKD BAZK 2
T39 RELAY,TEST 44244 BAZKE BAZK 0
T39 CIRCUIT BREAKER 42152 BAZKF BAZK 1
T39 ENGINE FIRE EXTINGUISH BBA BBA X AAAAAAAAAA
T39 SHUT-OFF VALVE 46222 BBAA BBA A
T39 SW.,ENG MASTER 23131 BBAB BBA A
T39 CABLE ASSY PN 10 166435 23133 BBAC BBA 8
T39 CIRCUIT BREAKER 42152 BBAD BBA 1
T39 ENGINE OVHT/FIRE WARNING BBA BBA AAAAAAAAAA
T39 DETECTOR ELEMENT 49111 BBBA BBB A
T39 INDICATOR LIGHT 49112 BBBC BBB A
T39 CONTROL UNIT 49113 BBBD BBB A
T39 QUICK DISCONNECT 49114 BBBD BBB 0
T39 LIGHT,PANEL 44241 BBBE BBB 1
T39 LIGHT,MASTER 44242 BBBF BBB 1
T39 LIGHT,INDICATOR 44243 BBBG BBB 2
T39 RELAY,TEST 44244 BBBH BBB 0
T39 SUPPLY & PRESSURIZATION BBC BBA AAAAAAAAAA
T39 CONTAINER ASSY XEA OF TWO 49211 BBBC BBC 5
T39 INDICATOR,DISCHARGE 49215 BBBC BBC 0
T39 SW.,SELECTOR 49218 BBCC BBC A
T39 VALVE,CHECK 49214 BBBD BBC 0
T39 AGENT RELEASE BBD BBA AAAAAAAAAA
T39 VALVE,DISCHARGE 49212 BBDA BBD A
T39 HANDLE ASSY 49217 BBDB BBD A
T39 CARTRIDGE,FIRE EXTINGUISH 97355 BBDC BBD A
T39 ONE ENGINE FUEL PRESSURE BPA BAA AAAAAAAAAA
T39 TANK BOOST PRESSURE BPH BPA K BPE AAAAAAAAAA
T39 SHUT-OFF VALVE 46222 BPHA BPH 0
T39 ENGINE MASTER SWITCH 23131 BPHB BPH 0
T39 CIRCUIT BREAKER 23132 BPHC BPH 0
T39 CABLE ASSY PN 10 166435 23133 BPHD BPH 8
T39 SAME SIDE XNORMALC BPC BPH 111111111
T39 BOOST PUMP 46221 BPCA BPC A
T39 RELAY,BOOST 46227 BPCB BPC A
T39 MOTOR,BOOST PUMP 46228 RPCC BPC A
T39 OTHER SIDE BPD BPH K BPC AAAAAAAAAA
T39 BOOST PUMP 46221 BPPA BPD A
T39 RELAY,BOOST 46227 BPPB BPD A
T39 MOTOR,BOOST PUMP 46228 BPPC BPD A
T39 CROSS-FEED VALVE XBOOSTC 46224 BPPD BPD A
T39 FIRST STAGE ENG. BOOST PRES. BPE BPA K BPH AAAAAAAAAA
T39 PUMP,FUEL,ENG DRIVEN 23212 RPEA BPE A
T39 CIRCUIT BREAKER 42152 RPEB BPE 1
T39 ENGINE BOOST X2ND STAC BPF BPA AAAAAAAAAA

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 PUMP,FUEL,ENG DR 23212 BPFA BPF A
T39 ACCESSORY DRIVE,TYPICAL BPFB BPF AAAAAAAAAA
T39 FUEL FILTERING BPG BPF 111111111
T39 FILTER ELEMENT 23214 BPGA BPG A
T39 FUEL HEAT BPH BPG Y AAAAAAAAAA
T39 HEATER 23215 BPHA BPH A
T39 AIR VALVE AND TUBE 23FAA BPHB BPH A
T39 VALVE/ACT ASSY,AIR SHUTOFF 23FAR BPHC BPH A
T39 LIGHT,PANEL 44241 BPHD BPH 0
T39 LIGHT,MASTER 44242 BPHE BPH 0
T39 LIGHT,INDICATOR 44243 BPHF BPH 0
T39 CIRCUIT BREAKER 42152 BPHG BPH 1
T39 FILTER BYPASS BPJ BPF K BPG AAAAAAAAAA
T39 FILTER XBY-PASS VALVE 23213 BPJA BPJ A
T39 FUEL SUPPLY BSA B OAAAAAAAAA50
T39 LEFT TANK SUPPLY LBSB BSA KRBSB AAAAAAAAAA
T39 RIGHT TANK SUPPLY RBSR RBSA KLRBSB AAAAAAAAAA
T39 FUEL CELL,WING INTEGRAL 46110 LBSBA LBSB 1
T39 FUEL CELL,WING INTEGRAL 46110 RBSBA RBSB 1
T39 SEALANT 46115 LBSBB LBSB 1
T39 SEALANT 46115 RBSBB RBSB 1
T39 STAT-O-SEAL 46116 LBSBC LBSB 1
T39 STAT-O-SEAL 46116 RBSBC RBSB 1
T39 EJECTOR 46211 LBSBD LBSB 0
T39 EJECTOR 46211 RBSBD RBSB 0
T39 DRAIN VALVE 46212 LBSBE LBSB 0
T39 DRAIN VALVE 46212 RBSBE RBSB 0
T39 COUPLING 46213 LBSBF LBSB 1
T39 COUPLING 46213 RBSBF RBSB 1
T39 DRAIN VALVE 46113 LBSBG LBSB 0
T39 DRAIN VALVE 46113 RBSBG RBSB 0
T39 ATTEN,INT GRAV REPLENISH BSC BSA 111111111
T39 INTERNAL GRAV REPLENISH BSD BSC 000111000
T39 CELL ASSY 46121 BSDA BSD 1
T39 SEAL 46124 BSDR BSD 1
T39 DRAIN VALVE 46127 BSDC BSD 0
T39 DRAIN LINE 46128 BSDD BSD 0
T39 CHECK VALVE 46414 BSDE BSD 0
T39 FUEL DUMP BSE FE 111111111
T39 NOZZLE 46411 BSEA BSE 1
T39 JETTISON VALVE 46421 LBSEB BSE 1
T39 JETTISON VALVE 46421 RBSEB BSE 1
T39 SWITCH,CONTROL 46422 BSEC BSE A
T39 VALVE,CROSSFEED 46224 BSED BSE 0
T39 RELAY,CONTROL 46425 BSEE BSE 1
T39 RELAY,CONTROL 46425 BSEF BSE 1
T39 CIRCUIT BREAKER 42152 BSEG BSE 1
T39 AUTO DUMP BSF BSE 111111111
T39 SWITCH,FLOAT 46423 LBSFA RSF 5
T39 SWITCH,FLOAT 46423 RBSFA BSF 5

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 MANUAL DUMP                                BSG                                BSE    K BSF    AAAAAAAAAA
T39 FUEL SYSTEM VENTING                        BSJ                                BSA                                001111100
T39 VENT VALVE                                46112  BSJA                       BSJ                                0
T39 GROUND REFUEL                             BSK                                RSA                                000000000
T39 SINGLE POINT REFUEL                       BSL                                RSK                                111111111
T39 RECEPTACLE,SINGLE POINT                 46311  BSJA                       BSL                                A
T39 CAP ASSY,SP                               46312  BSLB                       BSL                                0
T39 CONTROL & VENT VALVE                     46313  BSLC                       BSL                                A
T39 PACKING                                  46314  BSLE                       BSL                                1
T39 SHUT-OFF VALVE                           46315  BSLE                       BSL                                A
T39 DUEL,INT FUEL CONT VALVE                 46317  BSLE                       BSL                                A
T39 GRAVITY REFUEL                           BSM                                BSK                                111111111
T39 FILLER CAP,WING                           46111  LBSMA                       BSM                                0
T39 FILLER CAP,WING                           46111  RBSMA                       BSM                                0
T39 FILLER CAP,FUSELAGE                      46122  BSMB                       BSM                                0
T39 DOOR,ACCESS                              46126  BSMC                       BSM                                0
T39 FUEL BALANCING                           BSN                                BPD                                000011111
T39 VALVE,X-FEED XTANK<                     46223  BSNA                       BSN                                A
T39 FUEL FLOW                                BSQ                                BAZ    K BPA    111111111
T39 INDICATOR,FUEL FLOW                      51511  BSQA                       BSQ                                A
T39 XMITTER,FUEL FLOW                        51512  BSQB                       BSQ                                A
T39 TUBE ASSY FUEL CONT-METER                23BAW  BSQC                       RSQ                                1
T39 TUBE ASSY FUEL CONT-METER                23BAX  BSQD                       BSQ                                1
T39 CIRCUIT BREAKER                         42231  BSQE                       BSQ                                1
T39 FUEL PRESSURE LOW WARNING                 BSS                                BPF                                011111110
T39 SW.,DIFFERENTIAL PRESS                   51513  BSSA                       BSS                                A
T39 LIGHT,INDICATOR                          46225  BSSB                       BSS                                A
T39 LIGHT PANEL                              44241  BSSC                       BSS                                1
T39 LIGHT,MASTER                            44242  BSSD                       BSS                                1
T39 LIGHT,INDICATOR                          44243  BSSE                       BSS                                2
T39 RELAY,TEST                               44244  BSSF                       BSS                                0
T39 FUEL PUMP X-FEED FAIL                     BST                                BPE                                011111110
T39 LIGHT,INDICATOR                          46225  BSTA                       BST                                A
T39 LIGHT PANEL                              44241  BSTB                       BST                                1
T39 LIGHT,MASTER                            44242  BSTC                       BST                                1
T39 LIGHT,INDICATOR                          44243  BSTD                       BST                                2
T39 RELAY,TEST                               44244  BSTE                       BST                                0
T39 FUEL TANK X-FEED FAIL                     BSU                                BPD    K BSN    111111111
T39 LIGHT,INDICATOR                          46225  BSUA                       BSU                                A
T39 LIGHT PANEL                              44241  BSUB                       BSU                                1
T39 LIGHT,MASTER                            44242  BSUC                       BSU                                1
T39 LIGHT,INDICATOR                          44243  BSUD                       BSU                                2
T39 RELAY,TEST                               44244  BSUE                       BSU                                0
T39 FUEL JETTISON OPEN                       BSV                                BSG                                555555555
T39 LIGHT,INDICATOR                          46244  BSVA                       BSV                                A
T39 LIGHT,PANEL                              44241  BSVB                       BSV                                1
T39 LIGHT,MASTER                            44242  BSVC                       BSV                                1
T39 LIGHT,INDICATOR                          44243  BSVD                       BSV                                2
T39 RELAY,TEST                               44244  BSVE                       BSV                                0
T39 FUEL SHUT-OFF FAIL                       BSW                                BPA                                000000000

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 LIGHT,INDICATOR 46225 BSWA BSW A
T39 LIGHT PANEL 44241 BSWB BSW 1
T39 LIGHT,MASTER 44242 BSWC BSW 1
T39 LIGHT,INDICATOR 44243 BSWD BSW 2
T39 RELAY,TEST 44244 BSWF BSW 0
T39 CIRCUIT BREAKER 42152 BSWF BSW 1
T39 FUEL QUANTITY BSX B K BSA 000111100
T39 FUEL QUANTITY BSX BSG AAAAAAAAAA
T39 FUEL QTY INDICATION BSY BSX 000111111
T39 INDICATOR,FUEL QTY 51521 LBSYA BSY A
T39 INDICATOR,FUEL QTY 51521 RBSYA BSY A
T39 TANK UNIT %7 EAC 51522 LBSYB BSY 1
T39 TANK UNIT %7 EAC 51522 RBSYB BSY 1
T39 REFENCE CONDENSER 51523 LBSYC BSY A
T39 REFENCE CONDENSER 51523 RBSYC BSY A
T39 THERMISTOR 51525 LBSYD BSY A
T39 THERMISTOR 51525 RBSYD BSY A
T39 THERMISTOR CONTROL 51526 LBSYE BSY A
T39 THERMISTOR CONTROL 51526 RBSYE BSY A
T39 TEST SWITCH %SELECTOR< 51524 BSYF BSY 0
T39 CIRCUIT BREAKER 42231 BSYG RSY 1
T39 FUEL LEVEL LOW WARING BSZ BSX K BSY AAAAAAAAAA
T39 LIGHT,PANEL 44241 BSZA BSZ 1
T39 LIGHT,MASTER 44242 BSZB BSZ 1
T39 LIGHT,INDICATOR 44243 BSZC BSZ 2
T39 FILTER WARNING BTA RPF I RPF 111111111
T39 SW.,DIFF PRESSURE 23218 BTAB RTA A
T39 LIGHT,PANEL 44241 BTAC RTA 1
T39 LIGHT,MASTER 44242 BTAD RTA 1
T39 LIGHT,INDICATOR 44243 BTAE RTA 2
T39 CIRCUIT BREAKER 42152 BTAF RTA 1
T39 COMM/NAV/IDENT C AAAAAAAAAA
T39 COMMUNICATION CA C E 011111120
T39 EXTERNAL COMMUNICATION CAA CA 111111111
T39 VHF COMMUNICATION CAC CAA K CAF AAAAAAAAAA
T39 VHF-101 62100 CACA CAC 0
T39 STATIC DISCHARGER 6211A CACB CAC 0
T39 ANTENNA 62111 CACC CAC 8
T39 CONTROL 62112 CACD CAC 8
T39 MOUNT 62116 CACE CAC 0
T39 WILCOX 807A 62200 CACF CAC 0
T39 ANTENNA 62211 CACG CAC 8
T39 CONTROL 62112 CACH CAC 8
T39 MOUNT 62216 CACJ CAC 0
T39 VHF TRANSMIT CAD 333333333
T39 TRANSMITTER 62118 CADA CAD 8
T39 TRANSCEIVER 62217 CADB CAD 5
T39 VHF RECEIVE CAE 888888888
T39 RECEIVER 62117 CAEA CAE 8
T39 TRANSCEIVER 62217 CAEB CAE 5

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 UHF COMMUNICATION CAF CAA CAC 111111111
T39 CONTROL PANEL #C1057B< 6311A CAFA CAF 1
T39 AMPLIFIER OSCILLATOR 6311R CAFB CAF 1
T39 CONTROL MONITOR 6311C CAFD CAF 1
T39 CABINET ELECT EQUIP 6311D CAFE CAF 1
T39 DYNAMOTOR #DY-103< 6311E CAFF CAF 1
T39 MODULATOR RADIO 6311G CAFG CAF 1
T39 SELECTOR CONTROL 6311H CAFH CAF 1
T39 ANTENNA UPPER 6311I CAFJ CAF 1
T39 ANTENNA LOWER 6311J CAFK CAF 1
T39 RELAY ANTENNA CHANGE OVER 6311K CAFL CAF 1
T39 COAXIAL CABLE 6311L CAFM CAF 1
T39 CIRCUIT BREAKER 6311M CAFN CAF 1
T39 POWER SUPPLY #PP-1990< 6311N CAFO CAF 1
T39 MOUNT ASSEMBLY 6311P CAFQ CAF 0
T39 CONTROL PANEL-WIDE BAND 6311Q CAFR CAF 1
T39 CABINET ELECT EQUIP 6311R CAFS CAF 1
T39 MODULATOR RADIO WIDE BAND 6311S CAFT CAF 1
T39 UHF TRANSMIT CAG CAF 333333333
T39 RECEIVER TRANS RT463A 6311T CAGA CAG 1
T39 RECEIVER TRANS-WIDE BAND 6311U CAGB CAG 1
T39 UHF RECEIVE CAH CAF 888888888
T39 NORMAL RECEIVE CAJ CAF 111111111
T39 RECEIVER TRANS-WIDE BAND 6311V CAJA CAJ 1
T39 RECEIVER TRANS RT463A 6311W CAJB CAJ 1
T39 RECEIVER IF-AF R-568 6311X CAJC CAJ 1
T39 RECEIVER IF-AF WIDE BAND 6311Y CAJD CAJ 1
T39 GUARD RECEIVE CAK CAH K CAJ AAAAAAAAAA
T39 RECEIVER GUARD R-567 6311Z CAKA CAK 8
T39 SECURE SPEECH CAL CAF 000000000
T39 KEYSER DY28 6311A CALA CAL 8
T39 INTERNAL COMMUNICATION CAM CA 000000000
T39 STATION TO STATION COMM CAN CAA 111111111
T39 STATION TO STATION COMM CAN CAM FAAAAAAAAA
T39 STATION TO STATION COMM CAN CHF 111111111
T39 CIRCUIT BREAKER 3 EACH 6411A CANA CAN 1
T39 HEADSET 3 EACH 6411B CANB CAN 1
T39 U92 PLUG 3 EACH 6411C CANC CAN 1
T39 CORDAGE 3 EACH 6411D CAND CAN 1
T39 CONTROL PANEL 3 EACH 6411E CANE CAN 1
T39 MICROPHONE 3 EACH 6411F CANF CAN 1
T39 AUDIO AMPLIFIER 3 EACH 6411G CANG CAN 1
T39 RELAY CABIN MIKE 3 EACH 6411H CANH CAN 1
T39 SWITCH MICROPHONE 6411I CANJ CAN 1
T39 PAX LOUDSPEAKER COMM CAP CAM 111111111
T39 CONTROL PANEL 3 EACH 6411J CAPA CAP 1
T39 LOUD SPEAKER 2 EACH 6411K CAPB CAP 1
T39 SPEAKER AMPLIFIER 2 EACH 6411L CAPC CAP 1
T39 EQUIPMENT COOLING CB C 000000000

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ITEM	DESCRIPTION	QTY	UNIT	PRICE	TOTAL	REMARKS
T39	ELECT EQUIP COOLING SHELF	7111A	CBA	CB	1	
T39	BLOWERS	41410	CBB	CH	0	
T39	ELECT COMPT GRD BLOWER	41411	CBC	CB	0	
T39	ELECT SHELF BLOWER	41412	CBD	CB	1	
T39	HEAT EXCHANGER BLOWER	41416	CBE	CB	1	
T39	IDENTIFICATION		CC	C		000000000
T39	AN/APX-72 SYSTEM	65A00	CCA	CC	0	
T39	SWITCHING UNIT SA-1474 A	65AAA	CCB	CC	8	
T39	MOUNT MT-94817	65AAB	CCC	CC	0	
T39	COMPUTER KIT 1A/TSEC	65AAC	CCD	CC	1	
T39	MOUNT MT-3949A/U	65AAD	CCE	CC	0	
T39	ANTENNA UPPER/LOWER	65AAE	CCF	CC	1	
T39	CO-AXIAL CABLE	65AAF	CCG	CC	1	
T39	CONTROL XPONDER SET	65AAG	CCH	CC	8	
T39	REC-XMITTER RT-859	65AB0	CCJ	CC	8	
T39	PROCESSOR A1	65ABA	CKK	CC	8	
T39	DECODER A2	65ABB	CCL	CC	8	
T39	MODE 4 A3	65ABC	CCM	CC	8	
T39	ENCODER CLOCK	65ABD	CCN	CC	8	
T39	ENCODER CONTROL	65ABE	CCP	CC	8	
T39	ENCODER GATING	65ABF	CCQ	CC	8	
T39	POWER SUPPLY PSI	65ARG	CCR	CC	8	
T39	MOUNT MT-3509	65ABH	CCS	CC	0	
T39	RF ASSEMBLY	65ABJ	CCT	CC	8	
T39	XPONDER TEST SET TS1843A	65AC0	CCU	CC	0	
T39	MAIN FRAME ASSY A1	65ACA	CCV	CC	0	
T39	COMPARATOR/DECODER A4	65ACB	CCW	CC	0	
T39	MOUNT MT-3513	65ACC	CCX	CC	0	
T39	XPONDER TEST SET TS1843B	65AD0	CCY	CC	0	
T39	SIGNAL GENERATOR/RECEIVER	65ADA	CCZ	CC	0	
T39	DIRECTIONAL COUPLER	65ADB	CCZA	CC	0	
T39	NAVIGATION		CD	C		001111140
T39	STEERING SOLUTIONS		CE	CD		005555530
T39	CIRCUIT BREAKER	71115	CEA	CE	1	
T39	SWITCH RADIO INST MASTER	71118	CEB	CF	1	
T39	ENROUTE AIDS		CF	CF		008888800
T39	ENROUTE NAV DISPLAYS		CFA	CF		AAAAAAAAA
T39	INDICATOR SWITCHING UNIT	71111	CFAA	CFA	5	
T39	COURSE SELECTOR SWITCH	71116	CFAB	CFA	1	
T39	COURSE SEL FAIL LIGHT	71117	CFAC	CFA	0	
T39	BEARING		CFB	CFA		888888888
T39	PILOT BEARING		CFBA	CFB		K CFBB AAAAAAAAAA
T39	HORIZ SITUATION IND	51317	CFBAA	CFBA	8	
T39	CIRCUIT BREAKER	42231	CFBAB	CFBA	1	
T39	COPILOT BEARING		CFBB	CFB		K CFBA AAAAAAAAAA
T39	BEARING-DIST-HEAD IND	51314	CFBBA	CFBH	8	
T39	CIRCUIT BREAKER	42152	CFBBB	CFBB	1	
T39	COURSE		CFC	CFA		111111111
T39	OMNIMAG COURSE IND	51312	CFCA	CFC	8	
T39	CIRCUIT BREAKER	42231	CFCB	CFC	1	

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 DISTANCE CFU CFA 000111000
T39 PILOT DISTANCE CFDA CFU K CFDB AAAAAAAAAA
T39 HORIZ SITUATION IND 51317 CFDA CFDA 8
T39 CIRCUIT BREAKER 42231 CFDA CFDA 1
T39 COPILOT DISTANCE CFDB CFU K CFDA AAAAAAAAAA
T39 BEARING-DIST-HEAD IND 51314 CFDB CFDB 8
T39 CIRCUIT BREAKER 42152 CFDB CFDB 1
T39 HEADING CFE CFA 444444444
T39 PILOT HEADING CFEA CFE K CFEB AAAAAAAAAA
T39 ATTITUDE DIRECT IND 51232 CFEA CFEA 8
T39 CIRCUIT BREAKER 42231 CFEA CFEA 1
T39 COPILOT HEADING CFEB CFE K CFEA AAAAAAAAAA
T39 COPILOT 1 CFEC CFEB 111111111
T39 BEARING-DIST-HEAD IND 51314 CFEC CFEC 8
T39 CIRCUIT BREAKER 42152 CFEC CFEC 1
T39 COPILOT 2 CFED CFEB 111111111
T39 OMNIMAG COURSE IND 51312 CFED CFED 8
T39 CIRCUIT BREAKER 42231 CFED CFED 1
T39 ENROUTE NAV ELECTRONICS CFF CF AAAAAAAAAA
T39 TACAN CFG CFF 111111111
T39 MODULATOR MD-359 7121A CFGA CFG 8
T39 AZIMUTH GATE TD-273 7121B CFGB CFG 8
T39 AMPLIFIER AM-2212 7121D CFGC CFG 8
T39 RT UNIT RF-98 7121E CFGD CFG 8
T39 POWER SUPPLY PP-2331 7121F CFGE CFG 8
T39 VIDEO DECODER KY-290 7121G CFGF CFG 8
T39 PRESELECTOR Z108 7121K CFGG CFG 0
T39 CHANNEL SELECTOR C-2875 7121L CFGH CFG 8
T39 CRYSTAL SELECTOR TG-68 7121M CFGJ CFG A
T39 CIRCUIT BREAKER 42231 CFGK CFG 1
T39 REC/TRANSMIT CFH CFG AAAAAAAAAA
T39 ANTENNA 7121N CFHA CFH A
T39 REC/XMITTER RT-220C 71211 CFHB CFH 8
T39 CONTROL PANEL C-1763 71212 CFHC CFH 8
T39 MOUNT ASSY MT-929 71216 CFHD CFH 0
T39 SHOCK ASSY 71217 CFHE CFH 0
T39 RADIO INST MASTER RELAY3/471114 CFHF CFH 1
T39 RANGE CFJ CFG 000111000
T39 RANGE CONTROL 7121C CFJA CFJ 8
T39 RANGE GATE TD-272 7121H CFJB CFJ 8
T39 COUPLING CFK CFG 888888888
T39 TACAN COUPLER 71220 CFKA CFK 8
T39 IND COUPLER 71221 CFKB CFK 8
T39 RANGE MODULE 71222 CFKC CFK 1
T39 AZIMUTH MODULE 71223 CFKD CFK 8
T39 PHASE DETECTOR 71224 CFKE CFK 8
T39 MOUNTING 71225 CFKF CFK 0
T39 VOR CFL CFF 111111111
T39 VOR CFL CHD AAAAAAAAAA
T39 CONTROL PANEL 71512 CFLA CFL 8

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 INST MASTER RELAYS 3 AND 571114 CFLB CFL 1
T39 CIRCUIT BREAKER 42152 CFLC CFL 1
T39 INSTRUMENTATION CFM CFL AAAAAAAAAA
T39 INSTRUMENTATION UNIT 71514 CFMA CFM d
T39 POWER SUPPLY AC 516A-1 71515 CFMB CFM 8
T39 POWER SUPPLY AC 516B-3 71516 CFMC CFM 8
T39 RF-1F AMP MODULE 51X2B 71517 CFMD CFM 8
T39 1F AND AUDIO MODULE 71518 CFME CFM 8
T39 500KC FILTER MODULE 7151A CFMF CFM 3
T39 CIRCUIT BREAKER 42231 CFMG CFM 1
T39 RECEIVE CFN CFL AAAAAAAAAA
T39 REF AMP MODULE 344B1 71518 CFNA CFN 8
T39 VARIABLE AMP MODULE 7151C CFNB CFN 8
T39 CONVERT DISCRIM MODULE 7151E CFNC CFN 8
T39 BEARING SERVO MODULE 7151F CFND CFN 8
T39 VOR FLAG CONT MODULE 7151H CFNE CFN 1
T39 BEARING MECHANISM MODULE 7151J CFNF CFN 8
T39 AC POWER SUPPLY MODULE 7151K CFNG CFN 8
T39 CHASSIS ASSY MODULE 7151L CFNH CFN 1
T39 MOUNT ASSY 7151M CFNJ CFN 0
T39 RECEIVER 71511 CFNK CFN 8
T39 ANTENNA 71513 CFNL CFN A
T39 REMOTE DIRECTIONAL GYRO CG CE 888888888
T39 RELAY 7171A CGA CG 1
T39 REPEATER AMP A5 7171B CGB CG 3
T39 REPEATER MECHANISM MOD A-6 7171C CGC CG 8
T39 DIRECTIONAL GYRO 71712 CGD CG A
T39 COMPASS AMPLIFIER 71714 CGE CG 8
T39 SHOCK MOUNT 71715 CGF CG 0
T39 SERVO AMP A1 71716 CGG CG 8
T39 PRE AMP A2 71717 CGH CG 8
T39 POWER SUPPLY A3 71718 CGJ CG 8
T39 GYRO 71912 CGK CG A
T39 COUPLER 71914 CGL CG 8
T39 MOUNT 71915 CGM CG 0
T39 SLAVING AMP 71916 CGN CG 8
T39 POWER SUPPLY 71917 CGP CG 8
T39 MECHANISM COMPASS 71918 CGQ CG 8
T39 REMOTE MAG FLUX DETECT 51315 CGR CG 3
T39 CYRO MODE SELECT SWITCH 51322 CGS CG 5
T39 APPROACH AND LANDING AIDS CH CE 000000000
T39 VOR/ILS CHA CH 111111111
T39 HEADING CHB CHA AAAAAAAAAA
T39 PILOT HEADING CHBA K CHBB 111111111
T39 ATTITUDE DIRECTOR IND 51232 CHBAA CHBA 8
T39 CIRCUIT BREAKER 42231 CHBAB CHBA 1
T39 COPILOT HEADING CHBB K CHBA AAAAAAAAAA
T39 COPILOT 1 CHBC CHBB 111111111
T39 BEARING-DIST-HEAD IND 51314 CHBCA CHBC 8
T39 CIRCUIT BREAKER 42152 CHBCB CHBC 1

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 COPILOT 2                                CHBD                                CHBR                                111111111
T39 OMNIMAG COURSE IND                        51312  CHBDA                                CHBD                                8
T39 CIRCUIT BREAKER                          42231  CHBDB                                CHBD                                1
T39 GLIDESLOPE                                CHC                                CHA                                AAAAAAAAAA
T39 POSER SUPPLY 51V-3                        7141A  CHCA                                CHC                                8
T39 RF OSCILLATOR                            7141E  CHCB                                CHC                                8
T39 POSER SUPPLY DGS-20                       7141F  CHCC                                CHC                                8
T39 TONE FILTER                              7141H  CHCD                                CHC                                1
T39 RECEIVER                                71411  CHCE                                CHC                                8
T39 ANTENNA                                  71412  CHCF                                CHC                                A
T39 CONTROL PANEL                            71413  CHCG                                CHC                                8
T39 MOUNT ASSY                               71414  CHCH                                CHC                                0
T39 PILOT GLIDESLOPE                        CHCX                                CHC                                K CHCY  AAAAAAAAAA
T39 ATTITUDE DIRECTOR IND                    51232  CHCXA                                CHCX                                8
T39 CIRCUIT BREAKER                          42231  CHCXB                                CHCX                                1
T39 COPILOT GLIDESLOPE                      CHCY                                CHC                                K CHCX  AAAAAAAAAA
T39 OMNIMAG COURSE IND                        51312  CHCYA                                CHCY                                8
T39 CIRCUIT BREAKER                          42231  CHCYB                                CHCY                                1
T39 VOR RECEIVE                                CHD                                CHA                                AAAAAAAAAA
T39 LOCALIZER OUTPUT MODULE                  7151G  CHDA                                CHD                                8
T39 ADF                                        CHE                                CH                                K CHA  AAAAAAAAAA
T39 ADF RECEIVE                              CHEA                                CHE                                AAAAAAAAAA
T39 ANTENNA                                  71811  CHEAA                                CHEA                                A
T39 CONTROL                                  71812  CHEAB                                CHEA                                8
T39 INDICATOR                                71813  CHEAC                                CHEA                                1
T39 DYNAMOTOR                                71814  CHEAD                                CHEA                                A
T39 RECEIVER                                71815  CHEAE                                CHEA                                8
T39 MOUNT                                    71818  CHEAF                                CHEA                                0
T39 CIRCUIT BREAKER                          42152  CHEAG                                CHEA                                1
T39 CIRCUIT BREAKER                          42231  CHEAH                                CHEA                                1
T39 BEARING                                CHER                                CHE                                AAAAAAAAAA
T39 PILOT BEARING                            CHEC                                CHEB                                K CHED  AAAAAAAAAA
T39 HORIZ SITUATION IND                      51317  CHECA                                CHEC                                8
T39 CIRCUIT BREAKER                          42231  CHECB                                CHEC                                1
T39 COPILOT BEARING                          CHED                                CHEB                                K CHEC  AAAAAAAAAA
T39 BEARING-DIST-HEAD IND                    51314  CHEDA                                CHED                                8
T39 CIRCUIT BREAKER                          42152  CHEDB                                CHED                                1
T39 MARKER REACON                            CHF                                CH                                000000000
T39 RJ AND IF MODULE 5122                    7161A  CHFA                                CHF                                8
T39 AMPLIFIER MODULE 5122                    7161B  CHFB                                CHF                                8
T39 RECEIVER                                71611  CHFC                                CHF                                8
T39 ANTENNA                                  71612  CHFD                                CHF                                A
T39 SENSITIVITY SWITCH                       71613  CHFE                                CHF                                1
T39 INDICATOR LIGHT                          71614  CHFF                                CHF                                1
T39 SWITCH TEST                              71615  CHFG                                CHF                                0
T39 DIM AND TEST RELAY BOX                    71112  CHFH                                CHF                                0
T39 FLIGHT DIRECTOR GROUP                    CJ                                CF                                111111111
T39 COMPUTER                                71311  CJA                                CJ                                8
T39 FLT DIRECTOR SELECT SW                    71312  CJB                                CJ                                5
T39 MOUNT ASSY                               71313  CJC                                CJ                                0

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T39	DEAD RECONING		CK	CD	K CE	OAAAAAAAAO
T39	HEADING		CKA	CK		AAAAAAAAAA
T39	STANDBY COMPASS	51311	Ckaa	cka	1	
T39	COMPASS CORRECTION CARD	51324	ckab	cka	o	
T39	SEXTANT	51316	ckac	cka	1	
T39	SEXTANT MOUNT	51318	ckad	cka	o	
T39	TIME		ckb	ck		AAAAAAAAAA
T39	CLOCK	51321	ckba	ckb	o	
T39	WEATHER AVOIDANCE		cl	cd		OOOOJCOOO
T39	MODULATOR	7221A	cla	cl	8	
T39	REC-XMITTER RT-101B-28	72221	clb	cl	8	
T39	INDICATOR IN-112	72212	clc	cl	8	
T39	ANTENNA AT-113	72213	cld	cl	A	
T39	MOUNT MT-104AH	72214	cle	cl	o	
T39	INFO AND DISPLAY		D			AAAAAAAAAA
T39	FLIGHT STATUS		DA	D		011111130
T39	ATTITUDE		DAA	DA	E	000000AO
T39	CIRCUIT BREAKER	42231	daaa	dAA	1	
T39	INST PANEL VIBRATOR 2 EA	51111	daaaa	Da	o	
T39	SHOCK MOUNT	51112	daaab	DA	o	
T39	CKT BKR VIBRATOR	51113	daaac	DA	o	
T39	TURN-SLIP INDICATION		DAB	DAA	K DAC	AAAAAAAAAA
T39	INSTR PANEL COPILOT OUTBD	12112	DABA	DAB	1	
T39	RATE GYRO TRANSMITTER	5123A	DABB	DAb	B	
T39	TURN AND SLIP INDICATOR	51233	DABC	DAB	A	
T39	CIRCUIT BREAKER	42152	DABD	DAB	1	
T39	ROLL-PITCH		DAC	DAA		999999999
T39	PILOT INDICATION		DAD	DAC	K DAE	AAAAAAAAAA
T39	INSTR PANEL PILOT OUTBRD	12111	DADA	DAd	1	
T39	ATTITUDE DIR INDICATOR	51232	DADP	DAD	A	
T39	VERTICAL GYRO MDI	51234	DADC	DAD	A	
T39	RATE SWITCHING GYRO MC1	51235	DADD	DAD	A	
T39	COPILOT INDICATION		DAE	DAC	K DAO	AAAAAAAAAA
T39	INSTR PANEL COPILOT OBRD	12115	DAEA	DAE	1	
T39	ATTITUDE INDICATOR	51231	DAEB	DAE	A	
T39	VERTICAL GYRO MDI	51234	DAEC	DAE	A	
T39	RATE SWITCHING GYRO MC1	51235	DAED	DAE	A	
T39	ALTITUDE INFO		DAF	DA	E	JOA111AAO
T39	VERTICAL VELOCITY		DAG	DAF		OOOOOOOI0
T39	PILOT INDICATION		DAH	DAG	K DAJ	AAAAAAAAAA
T39	INSTR PANEL PILOT OUTBRD	12111	DAHA	DAH	1	
T39	VERT VELOCITY INDICATOR	51224	DAHB	DAH	A	
T39	COPILOT INDICATION		DAJ	DAG	K DAH	AAAAAAAAAA
T39	INSTR PANEL CPLT OUTBRD	12115	DAJA	DAJ	1	
T39	VERT VELOCITY INDICATOR	51224	DAJB	DAJ	A	
T39	ALTITUDE INDICATION		QAK	DAF		AAAAAAAAAA
T39	COMMUTER CPU-46A B26	5123B	DAKA	DAK	o	
T39	MOUNT	5123C	DAKB	DAK	o	
T39	COMPUTER CPU 46A/A	5123D	DAKC	DAK	o	
T39	PILOT INDICATION		DAL	DAK	K DAM	AAAAAAAAAA

FLIGHT SAFETY PREDICTION TECHNIQUE

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 DRAIN PLUG 51245 DBFA DBF 0
T39 STATIC PORT *ALT< 51247 DBFB DBF A
T39 STATIC NO 2 DIST DBG DAJ AAAAAAAAAA
T39 STATIC NO 2 DIST DBG DAM AAAAAAAAAA
T39 STATIC NO 2 DIST DBG DAW AAAAAAAAAA
T39 ALTERNATE SELECT NO 2 DBH K DBJ AAAAAAAAAA
T39 STATIC SELECTOR VALVE 51243 DBHA DBH A
T39 STATIC NO 2 PRESSURE DBJ DAN AAAAAAAAAA
T39 STATIC NO 2 PRESSURE DBJ DBH 111111111
T39 STATIC NO 2 PRESSURE DBJ DEA AAAAAAAAAA
T39 DRAIN PLUG *2 EAK 51245 DBJA DBJ 0
T39 LEFT STATIC PORT DBK DBJ 111111111
T39 STATIC PORT 51244 DBKA DBK A
T39 RIGHT STATIC PORT DBL DBJ 111111111
T39 STATIC PORT 51244 DBLA DBL A
T39 LH PITOT-STATIC *PITOT< DBM DAS AAAAAAAAAA
T39 PITOT HEAD 51241 DBMA DBM A
T39 DRAIN PLUG 51245 DBMB DBM 0
T39 PITOT ANTIICE DBN DBM A AAAAAAAAAA
T39 CIRCUIT BREAKER 42152 DBNA DBN 1
T39 HEATING ELEMENT 51242 DBNB DBN A
T39 RH PITOT-STATIC *PITOT< DBP DAW AAAAAAAAAA
T39 RH PITOT-STATIC *PITOT< DBP DEA AAAAAAAAAA
T39 RIGHT PITOT-STATIC PITOT DBP NAT 000000000
T39 PITOT HEAD 51241 DBPA DBP A
T39 DRAIN PLUG *2 EAK 51245 DBPB DBP 1
T39 PITOT ANTIICE DBQ DBP A AAAAAAAAAA
T39 CIRCUIT BREAKER 42152 DBQA DRQ 1
T39 HEATING ELEMENT 51242 DBQB DBQ A
T39 FREE AIR TEMP INFO DC D 000000000
T39 FREE AIR TEMP INFO DC DAZ AAAAAAAAAA
T39 INSTR PANEL COPLTS OUTBRD 12115 DCA DC 1
T39 CIRCUIT BREAKER 42152 DCB DC 1
T39 FREE AIR TEMP INDICATOR 51237 DCC DC 1
T39 FREE AIR TEMP DETECTOR 51238 DCD DC A
T39 WARNINGS DD D 011111110
T39 PERSONNEL WARNING DDB DD 000000000
T39 CIRCUIT BREAKER 42152 DDBA DDB 1
T39 ALARM BELL 49311 DDBB DDB A
T39 MISC INFO AND DISPLAY DE D 000000000
T39 SIGNAL DATA RECORD DEA DE AAAAAAAAAA
T39 CABIN AIR DUMP SAFETY VAL 41212 DEAA DEA 5
T39 CIRCUIT BREAKER 42152 DEAR DEA 1
T39 VGH FLIGHT DATA RECORDER 55100 DEAC DEA 8
T39 RECORDER COMPUTER 55111 DEAD DEA A
T39 MAGAZINE 55112 DEAE DEA A
T39 ACCELEROMETER 55113 DEAF DEA A
T39 ENVIRONMENTAL CONTROL E AAAAAAAAAA
T39 LIGHTING EA F 111111121
T39 INTERNAL LIGHTING EAA EA 0AAAAAAAA0

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 CABIN LIGHTING EAB EAA 000000000
T39 CONTROL PANEL 44211 EABA EAB 1
T39 SWITCH 10 EACH 44212 EABB EAB 1
T39 LIGHT ASSY 8EA 44215 EABC EAB 1
T39 LIGHT ASSY SIGN 2EA 44216 EABD EAB 1
T39 COCKPIT LIGHTING EAC EAA AAAAAAAAAA
T39 EMERGENCY LIGHTING EAD EAC K EAE AAAAAAAAAA
T39 RELAY CONTROL 44218 EADA EAD A
T39 POWER UNIT-EMERGENCY 4421E EADB EAD A
T39 LIGHT ASSY 3EA 44215 EADC EAD 1
T39 NORMAL LIGHTING EAE FAC EAD 111111111
T39 CIRCUIT BREAKER DC 42152 EAEA EAE 1
T39 CIRCUIT BREAKER AC 42231 EAE EAE 1
T39 INSTRUMENT LIGHTS EA OF 2 EAF EAE 111111111
T39 RESISTOR DIMMING 4421C EAFA EAF 1
T39 CONTROL PANEL 44211 EAFB EAF 1
T39 LIGHT ASSY FLOOD 44215 EAF C EAF 1
T39 LIGHT ASSY INSTR 44231 EAFD EAF 1
T39 CONSOLE LIGHTS EA OF 2 EAG EAE 000000000
T39 RESISTOR DIMMING 4421C EAGA EAG 1
T39 CONTROL PANEL 44211 EAGR EAG 1
T39 LIGHT ASSY 44215 EAGC EAG 1
T39 DOME LIGHTS EAH EAF 000000000
T39 RESISTOR DIMMING 2EA 4421C EAHA EAH 1
T39 CONTROL PANEL 44211 EAHB EAH 1
T39 SWITCH 2EA 44212 EAH C EAH 1
T39 LIGHT ASSY 44215 EAH D EAH 1
T39 EXTERNAL ATTENUATION EAL EA 111111121
T39 EXTERNAL LIGHTING EAM EAL 111111111
T39 CIRCUIT BREAKER 42152 EAMA EAM 1
T39 LAND/TAXI LIGHTS EAN EAM 100000051
T39 CONTROL PANEL 44112 EANA EAN 1
T39 LANDING AND TAXI LT ASSY 44113 EANB EAN 5
T39 LAND AND TAXI LT BRACKET 44117 EANC EAN 1
T39 SWITCH 44118 EAND EAN 5
T39 POSITION LIGHTS EAP EAM 000000000
T39 CONTROL PANEL 44112 EAPA EAP 1
T39 POSITION LIGHT ASSY 6EA 44114 EAPB EAP 1
T39 SWITCH 44118 EAPC EAP 5
T39 ANTI-COLLISION LIGHT EAQ EAM 000000000
T39 CONTROL PANEL 44112 EAQA EAQ 1
T39 ANTI-COLLISION LT ASSY 2EA 44115 EAQB EAQ 1
T39 SWITCH 44118 EAQC EAQ 5
T39 ICE CHECK LIGHTS EAR EAM 000000000
T39 CONTROL PANEL 44112 EARA EAR 1
T39 ICE CHECK LIGHT ASSY 2EA 44116 EARB EAR 1
T39 SWITCH 44118 EARC EAR 5
T39 CIRCUIT BREAKER 42152 EARD EAR 1
T39 WINDSHIELD CLEARING EB EBC GA00000GA0
T39 RAIN REMOVAL ERA EB G 010000010

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 BLADE 2EA 49411 EBAA ERA 1
T39 ARM ASSY 2EA 49412 EBAB ERA 1
T39 CONVERTER ASSY 49413 EBAC ERA 8
T39 FLEX DRIVE 49414 EBAD FBA A
T39 MOTOR ASSY 49415 EBAE EBA 8
T39 CIRCUIT BREAKER 42152 EBAF EBA 1
T39 ANTI-ICE EBB A 010000010
T39 WINDSHIELD HEAT 41530 EBBA EBB 0
T39 HEATING ELEMENT 6EA 41531 EBBB EBB 1
T39 SENSING ELEMENT 5EA 41532 EBBC EBB 1
T39 OVERHEAT THERMOSWITCH 41533 EBBB EBB 5
T39 CONTROLLER 41535 EBHE EBB 3
T39 SWITCH 41536 EBBF FRB A
T39 AC GENERATOR SYSTEM 42210 EBBG EBB 0
T39 GENERATOR ENG DRIVEN 2EA 42211 EBBH EBB 1
T39 ADAPTER OAD 42212 EBBJ EBB 8
T39 LIGHT PANEL 44241 EBBK EBB 1
T39 LIGHT MASTER 44242 EBBL FRB 1
T39 LIGHT INDICATOR 44243 EBBM EBB 1
T39 CIRCUIT BREAKER 42152 EBBN EBB 1
T39 ATTENUATION EBC E 010000020
T39 CABIN ENVIRONMENT EC F 111111111
T39 AIR COND AND PRESSURIZATION ECA EC ED 001111100
T39 COCKPIT AIR OUTLET 4EA 41116 ECAA ECA 0
T39 CABIN AIR OUTLET 12EA 41117 ECAB ECA 0
T39 CAB GRD AIR COND FIT-CK V 41215 ECAC ECA 0
T39 CIRCUIT BREAKER 7EA 42152 ECAD ECA 1
T39 CABIN AIR DUMP MAN CONT VL 41213 ECAE ECA 0
T39 HOT AIR SUPPLY ECB ECA AAAAAAAAAA
T39 EMERGENCY DUCTING ECC K ECD AAAAAAAAAA
T39 EMER PRESS BLEED SHUTOFF VALV 4111E ECCA ECC A
T39 PRESS DUCTFAIL SWITCH 9941B ECCB ECC 1
T39 DUCT FAIL LIGHT 44242 ECCC FCC 1
T39 NORMAL HOT AIR ECD ECH ECC 111111111
T39 BLEED AIR FLO LIMIT VALV 4111C ECDA FCD 1
T39 DUCTING 41114 ECDB ECD 1
T39 SEALING ECE ECA 111111111
T39 REV FLO CK VALV 2EA 4111F ECEA ECE 1
T39 DOOR SEAL PRESS RESERVOIR 41311 ECEB ECE 1
T39 PNEUMATIC PRESS CK VALV 41312 ECEC ECF 1
T39 ESCAPE HATCH SEAL 41313 ECED ECE 3
T39 ESCAPE HATCH SEAL NIPPLE 41315 ECEE ECE 0
T39 ENTRANCE DOOR SEAL 41316 ECEF ECE 3
T39 REGULATOR ASSY DOOR SEAL 41317 ECEG ECE 8
T39 RAIN SEAL ENTRANCE DOOR 11215 ECEM ECE 1
T39 PRESSURE REGULATION ECF ECA 333333333
T39 AUTO REGULATION ECG ECF ECH 111111111
T39 CAB AIR PRESS REG 41211 ECGA ECG A
T39 PRESSURE DUMP ECH K ECG AAAAAAAAAA
T39 CAB AIR DUMP-SAFETY VALV 41212 ECHA ECH 1

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12345678901234567890123456789012345678901234567890123456789012345678901234567890

T39 PNEUMATIC RELAY	41218	ECMC	ECM	1
T39 CAB AIR DUMP SOL CONT VAL	41221	ECMD	ECM	1
T39 PRESSURE INDICATION		ECJ	ECM	111111111
T39 INST PANEL COPLT INBRD	12114	ECJA	ECJ	1
T39 INST PANEL COPLT OUTBRD	12115	ECJB	ECJ	1
T39 CAB PRESS FAIL SWITCH	41126	ECJC	ECJ	1
T39 WARNING HORN	41223	ECJD	ECJ	1
T39 LIGHT PANEL CAUTION	44241	ECJE	ECJ	1
T39 LIGHT MASTER CAUTION	44242	ECJF	ECJ	1
T39 LIGHT INDICATOR	44243	ECJG	ECJ	1
T39 CAB ALTIMETER DIFF PRES ID	51225	ECJH	ECJ	1
T39 CAB RATE OF CLIMB ID	51226	ECJJ	ECJ	0
T39 TEMPERATURE CONDITIONING		ECK	ECA	222222222
T39 CAB COOL AIR SUPP CK VALV	41113	ECKA	ECK	0
T39 CAB AIR SUPPLY CK VALVE	41214	ECKB	ECK	0
T39 REFRIGERATION		ECM	ECK	005555000
T39 REFRIGERATION UNIT	41111	ECMA	ECM	8
T39 TURBINE	41118	ECMB	ECM	A
T39 HEAT EXCHANGER		ECN	ECK	333333333
T39 RAM AIR SCOOP	1151J	ECNA	ECN	0
T39 DUCT RAM AIR	1151K	ECNB	ECN	1
T39 FOOTWARMER		ECP	ECK	000000000
T39 FOOTWARMER MANIFOLD 2EA	41115	ECPA	ECP	1
T39 CAB TEMP SENSOR BLOWER	41120	ECPB	ECP	0
T39 CIRCUIT BREAKER 2EA	4112E	ECPC	ECP	1
T39 HEATER CAB FLOOR FT WARM	4112G	ECPD	ECP	0
T39 FAN PLT AND COPLT FT WARM	4112H	ECPE	ECP	1
T39 HEATER PLT-COPLT FT WARM	4112J	ECPF	ECP	1
T39 WATER SEPERATOR		ECQ	ECK	111111000
T39 WATER SEP SCREEN ASSY	4111A	ECQA	ECQ	8
T39 WATER SEP CONDENSER ASSY	4111B	ECQB	ECQ	8
T39 WATER SEP ASSY	41112	ECQC	ECQ	8
T39 WATER SEP ANTI-ICE VALVE	41121	ECQD	ECQ	1
T39 WATER SEP PRESS DIFF SENS	41122	ECQE	ECQ	1
T39 CONTROL		ECR	ECK	AAAAAAAAA
T39 CIRCUIT BREAKER	42231	ECRA	ECR	1
T39 CAB AIR ISO CONT-GRD TEST	41216	ECRB	ECR	0
T39 HOT AIR MIX VALVE	41126	ECRC	ECR	1
T39 AUTOMATIC TEMP CONTROL		ECS	ECR	ECT 111111111
T39 DUCT AIR TEMP SENSOR	4112B	ECSA	ECS	A
T39 CAB AIR TEMP SENSOR	4112C	ECSB	ECS	A
T39 CAB TEMP SENSOR VALVE	41124	ECSC	ECS	8
T39 CAB TEMP CONTROL BOX	41125	ECSD	ECS	A
T39 MANUAL TEMP CONTROL		ECT	ECR	K ECS AAAAAAAAAA
T39 PEDESTAL	12116	ECTA	ECT	1
T39 SWITCH 2EA	4112F	ECTB	ECT	5
T39 TEMP INDICATION		ECU	ECT	111111111
T39 CAB AIR SUPP OHEAT THEM SW	41123	ECUA	ECU	1
T39 LIGHT PANEL CAUTION	44241	ECUB	ECU	1
T39 LIGHT MASTER	44242	ECUC	ECU	1

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 LIGHT INDICATOR 44243 ECUD ECU 1
T39 RIGHT ENGINE BLEED AIR ECV ECC AAAAAAAAAA
T39 RIGHT ENGINE BLEED AIR ECV ECD K ECW AAAAAAAAAA
T39 ENG BLEED SHUTOFF VALVE 4111D ECVA ECV 5
T39 REVERSE FLO CK VALV 4111F ECVB ECV 1
T39 DUCTING 41114 ECVC ECV 1
T39 LEFT ENGINE BLEED AIR ECW ECD K ECV AAAAAAAAAA
T39 ENGINE BLEED SHUTOFF VALVE 4111D ECWA ECW 5
T39 REV FLOW CHECK VALVE 4111F ECWB ECW 1
T39 DUCTING 41114 ECWC ECW 1
T39 DESCENT SUPP PRESSURE ECX ECF 000000100
T39 CAB FLOOD FLOW VALVE 41127 ECXA ECX A
T39 PRESSURE INTEGRITY ECV ECE 111111111
T39 PILOTS SLIDING WINDOW ASSY 11120 ECYA ECY 8
T39 COCKPIT WINDOW ASSY 1114C ECVB ECV 0
T39 CABIN WINDOW ASSY 11170 ECVB ECV 0
T39 ENTRANCE DOOR ASSY 11210 ECVB ECV 8
T39 EMER ESCAPE INNER DR ASSY 11310 ECVB ECV 3
T39 EMER ESCAPE OUTER DR ASSY 11320 ECVB ECV 3
T39 EMER ESCAPE JETTISON SYST 11330 ECVB ECV 0
T39 HACKUP ED K ECA 00AAAAA00
T39 VENTILATION EDA ED 333333333
T39 EMERG RAM AIR SUPPLY VALV 41222 EDAA EDA A
T39 CIRCUIT BREAKER 42152 EDAB FDA 1
T39 RAM AIR INLET VALVE 41520 EDAC EDA A
T39 HEATING ELEMENT 41521 EDAD EDA 0
T39 BIRD STOPPER FLAPPER DOOR 41522 EDAE EDA 1
T39 OXYGEN EE ED AAAAAAAAAA
T39 BACKUP OXYGEN EEA EE K EEB AAAAAAAAAA
T39 RECHARGER HOSE ASSY 4711M EEAA EEA 0
T39 PORTABLE OXYGEN CYLINDER 47211 EEAB EEA A
T39 GAGE 47212 EEAC EEA 0
T39 SUPPORT BRACKET 47213 EEAD EEA 0
T39 REGULATOR 47214 EEAE EEA 8
T39 FIXED OXYGEN EEB EE EEA 222222222
T39 SUPPLY EEC EEB AAAAAAAAAA
T39 MANIFOLD 4711P EECA EEC 3
T39 OXYGEN CYLINDER 47112 EECB EEC A
T39 FILLER VALVE 47113 EECC EEC 1
T39 PRESSURE REDUCER 47115 EECB EEC 1
T39 COCKPIT OXYGEN EED EEB AAAAAAAAAA
T39 REGULATOR PILOTS 2EA 4711D EEDA EED 1
T39 MASK 2EA 4711F EEDB EED 1
T39 AIR BREATHING VALVE 2EA 4711G EEDC EED 1
T39 MASK-TO-REG HOSE 2EA 4711J EEDD EED 1
T39 CABIN OXYGEN EEE EEB 000000000
T39 REGULATOR PASSENGER 4EA 4711E EEE 1
T39 MASK 7EA 4711F EEE 1
T39 AIR BREATHING VALVE 4EA 4711G EEE 1
T39 IN-USE-VALVE 7EA 4711H EEE 1

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 MASK-TO-RFG HOSE 7EA      4711J  EEEE      EEE      1
T39 COMPARTMENT DOORS 7EA     4711K  EEEF      EEE      0
T39 OXYGEN SHUTOFF VALVE      4711A  EEEG      EEF      A
T39 OXYGEN CONTROL VALVE      4711B  EEEH      EEE      A
T39 INDICATION                  EEG      EEA      111111111
T39 CIRCUIT BREAKER           42152  EEGA      EFG      1
T39 CIRCUIT BREAKER           42231  EEGB      EFG      1
T39 PRESSURE SWITCH           4711B  EEGC      EEG      A
T39 INDICATOR LIGHT           4711C  EEGD      EEG      1
T39 FLOW INDICATOR 2EA        4711N  EEGE      EFG      1
T39 PRESSURE TRANSMITTER       47116  EEGF      FEG      1
T39 PRESSURE GAGE              47117  EEGG      EEG      1
T39 CABIN FIRE EXTINGUISH      EF      E      X      AAAAAAAAAA
T39 PORTABLE SYSTEM           49230  EFA      EF      8
T39 BRACKET ASSY              49231  EFB      EF      0
T39 GAGE                       49232  FFC      EF      0
T39 EXTINGUISHER              49233  EFD      EF      8
T39 FLIGHT CONTROL             F      F      AAAAAAAAAA
T39 LIFT AUGMENTATION          FA      F      010000030
T39 FLAPS POSITIONING           FAA      FA      AAAAAAAAAA
T39 INDICATOR, POSITION         51611  FAAA      FAA      0
T39 XMITTER, POSITION           51612  FAAB      FAA      0
T39 CIRCUIT BREAKER           42152  FAAC      FAA      1
T39 LEFT FLAP POSITIONING       LFAB      FAA      AAAAAAAAAA
T39 RIGHT FLAP POSITIONING      RFAB      FAA      AAAAAAAAAA
T39 WING FLAP ASSY            14610  LFABA      LFAB      1
T39 WING FLAP ASSY            14610  RFABA      RFAB      1
T39 SKIN                       14612  LFABB      LFAB      0
T39 SKIN                       14612  RFABB      RFAB      0
T39 HONEYCOMB                  14613  LFABC      LFAB      0
T39 HONEYCOMB                  14613  RFABC      RFAB      0
T39 FRAME STRUCTURE           14615  LFABD      LFAB      1
T39 FRAME STRUCTURE           14615  RFABD      RFAB      1
T39 INBOARD ROLLER ASSY        14616  LFABE      LFAB      3
T39 INBOARD ROLLER ASSY        14616  RFABE      RFAB      3
T39 OUTBOARD ROLLER ASSY       14617  LFABF      LFAB      3
T39 OUTBOARD ROLLER ASSY       14617  RFABF      RFAB      3
T39 TRACK ASSY                 14631  LFABG      LFAB      3
T39 TRACK ASSY                 14631  RFABG      RFAB      3
T39 LEFT FLAP ACTUATION        LFAC      FAA      KR FAC  00AAAAAAAA
T39 RIGHT FLAP ACTUATION       RFAC      FAA      KL FAC  00AAAAAAAA
T39 ACTUATOR                   14635  LFACA      LFAC      A
T39 ACTUATOR                   14635  RFACA      RFAC      A
T39 FLEX SHAFT                 14632  FACB      LFAC      A
T39 FLEX SHAFT                 14632  FACB      RFAC      A
T39 INTERCONNECT               14634  FACC      LFAC      A
T39 INTERCONNECT               14634  FACC      RFAC      A
T39 FLAPS CONTROL              FAD      FAA      00AAAAAAAA
T39 SW., FLAPS                 9914A  FADA      FAD      A
T39 SLATS POSITIONING ATTENUATE FAE      FA      111111111

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 SLATS POSITIONING FAF FAE 111111111
T39 LEFT SLATS POSITIONING LFAG FAF 111111111
T39 RIGHT SLATS POSITIONING RFAG FAF 111111111
T39 LEADING EDGE SLAT ASSY 14710 LFAGA LFAG 1
T39 LEADING EDGE SLAT ASSY 14710 RFAGA RFAG 1
T39 SKIN 14717 LFAGB LFAG 0
T39 SKIN 14717 RFAGB RFAG 0
T39 TRACK 14710 LFAGC LFAG 5
T39 TRACK 14710 RFAGC RFAG 5
T39 ROLLERS 14710 LFAGD LFAG 5
T39 ROLLERS 14710 RFAGD RFAG 5
T39 SLAT, INBOARD 14712 LFAGE LFAG 1
T39 SLAT, INBOARD 14712 RFAGE RFAG 1
T39 SLAT, INB, INTERMEDIATE 14713 LFAGF LFAG 1
T39 SLAT, INB, INTERMEDIATE 14713 RFAGF RFAG 1
T39 SLAT, INTERMEDIATE 14714 LFAGG LFAG 1
T39 SLAT, INTERMEDIATE 14714 RFAGG RFAG 1
T39 SLAT, OUTB, INTERMEDIATE 14715 LFAGH LFAG 1
T39 SLAT, OUTB, INTERMEDIATE 14715 RFAGH RFAG 1
T39 SLAT OUTBOARD 14716 LFAGJ LFAG 1
T39 SLAT OUTBOARD 14716 RFAGJ RFAG 1
T39 FITTING, INTERCONNECT 14718 LFAGK LFAG 1
T39 FITTING, INTERCONNECT 14718 RFAGK RFAG 1
T39 YAW CONTROL FB F 010000030
T39 RUDDER POSITIONING FBA FB AAAAAAAAAA
T39 RUDDER ASSY 14510 FBAA FBA 1
T39 ROOT RIB 1451A FBAB FBA 0
T39 SKIN 14512 FBAC FBA 0
T39 HINGE SUPPORT 14515 FBAD FBA 2
T39 ACCESS DOOR 14517 FBAE FBA 0
T39 RUDDER CONTROL FBB FBA AAAAAAAAAA
T39 TORQUE TUBE 14522 FBBA FBB 8
T39 LINKAGE 14525 FBBD FBB 8
T39 CABLE 14526 FBBC FBB A
T39 FAIRLEAD 14527 FBBD FBB 0
T39 BUNGEE 14528 FBBD FBB 1
T39 RUDDER PEDAL CONTROL, EA OF2 FBC FBB 111111111
T39 PEDALS 14521 FBBC FBB 8
T39 TRIM CONTROL FBD FBB 000000000
T39 TRIM TAB 14518 FBDA FBD 1
T39 ACTUATOR 14543 FBDB FBD A
T39 SW., TRIM SELECTOR 14117 FBDC FBD 8
T39 RUDDER TRIM INDICATOR 51623 FBDD FBD 0
T39 RUDDER POSITION XMITTER 51624 FBDE FBD 0
T39 CIRCUIT BREAKER 42152 FBDF FBD 1
T39 NORMAL TRIM ACTIVATION FBE FBD FBF 111111111
T39 SW., TRIM *NORMAL< 14541 FBEA FBE A
T39 SW., EMER DISCONNECT *2EAK 14116 FBEB FBE 1
T39 ALTERNATE TRIM ACTIVATION FBF FBD K FBE AAAAAAAAAA
T39 SW., TRIM *ALTERNATE< 14542 FBFA FBF A

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 PITCH CONTROL FC F OAAAAAAAAA
T39 ELEVATOR POSITIONING FCA FC AAAAAAAAAA
T39 ELEVATOR CONTROL FCB FCA 094444490
T39 PILOT CONT WHEEL/COLUMN 14111 FCBA FCB 1
T39 COPILOT CONT WHEEL/COLUMN 14112 FCBB FCB 1
T39 BOB WEIGHT BUNGEE 14436 FCBC FCB 0
T39 TORQUE TUBE 14437 FCBD FCB 8
T39 LEFT ELEVATOR DRIVE LFCC FCB KR FCC AAAAAAAAAA
T39 RIGHT ELEVATOR DRIVE RFCC FCB KL FCC AAAAAAAAAA
T39 CABLE 14434 LFCCA LFCC A
T39 CABLE 14434 RFCCA RFCC A
T39 LINKAGE 14433 LFCCB LFCC 8
T39 LINKAGE 14433 RFCCB RFCC 8
T39 HORN 14438 LFCCC LFCC 1
T39 HORN 14438 RFCCC RFCC 1
T39 LEFT ELEVATOR POSITIONING LFCD FCB AAAAAAAAAA
T39 RIGHT ELEVATOR POSITIONING RFCD FCB AAAAAAAAAA
T39 ELEVATOR ASSY 14410 LFCDA LFCD 1
T39 ELEVATOR ASSY 14410 RFCDA RFCD 1
T39 SKIN 14412 LFCDB LFCD 0
T39 SKIN 14412 RFCDB RFCD 0
T39 HINGE SUPPORT 14415 LFCDC LFCD 2
T39 HINGE SUPPORT 14415 RFCDC RFCD 2
T39 HOR STAB TRIM POSITIONING FCE FCA 011000110
T39 TORQUE TUBE 14326 FCEA FCE 8
T39 STAB POS INDICATOR 51625 FCEB FCE 0
T39 STAB POS XMITTER 51626 FCEC FCE 0
T39 CENTER SECTION BEAM 14325 FCED FCE 8
T39 BIAS BUNGEE 14435 FCEE FCE 1
T39 FLEX SHAFT ASSY 14324 FCEF FCE A
T39 CIRCUIT BREAKER 42152 FCEG FCE 1
T39 LEFT TRIM ACTUATION LFCE FCE KR FCF AAAAAAAAAA
T39 RIGHT TRIM ACTUATION RFCE FCE KL FCF AAAAAAAAAA
T39 ACTUATOR TRIM 14322 LFCFA LFCE A
T39 ACTUATOR TRIM 14322 RFCFA RFCE A
T39 STABILIZER POSITIONING FA 2 FCG FCE AAAAAAAAAA
T39 HOR STAB ASSY 14310 FCGA FCG 1
T39 SKIN 14312 FCGB FCG 0
T39 NORMAL TRIM ACTIVATION FCH FCE FCJ 111111111
T39 SW.,TRIM SELECTOR 14117 FCHA FCH A
T39 SW.,TRIM %NORMAL< %2EA< 14113 FCHB FCH 1
T39 SW.,EMER DISCONNECT%2EA< 14116 FCHC FCH 1
T39 ALTERNATE TRIM FCJ FCE K FCH AAAAAAAAAA
T39 SW.,TRIM SELECTOR 14117 FCJA FCJ A
T39 SW.,TRIM %ALTERNATE< 14115 FCJB FCJ A
T39 ROLL CONTROL FD F JAAAAAAAAA
T39 AILERON POSITIONING FDA FD AAAAAAAAAA
T39 AILERONS POSITIONED,FA OF 2 FDB FDA 021111120
T39 AILERON ASSY 14210 FDBA FDB 1
T39 SKIN 14212 FDBB FDB 0

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 HONEYCOMB 14213 FDB FDB 0
T39 CABLE 14235 FDB FDB A
T39 PUSH ROD 14232 FDB FDB A
T39 BELLCRANK 14231 FDB FDB 7
T39 AILERON CONTROL FDC FDB AAAAAA
T39 BELLCRANK 14231 FDC FDB A
T39 LINKAGE 14234 FDC FDB A
T39 PILOT CONTROL FDC K FDB AAAAAA
T39 CONTROL WHEEL/COLUMN 14111 FDB FDB A
T39 COPILOT CONTROL FDC K FDB AAAAAA
T39 CONTROL WHEEL/COLUMN 14112 FDB FDB A
T39 TRIM FDB FDB 00000000
T39 TRIM TAB 14214 FDB FDB A
T39 TAB ACCESS DOOR 14218 FDB FDB 0
T39 TRIM ACTUATOR 14236 FDB FDB A
T39 AILERON TRIM INDICATOR 51621 FDB FDB 0
T39 AILERON POSITION XMITTER 51622 FDB FDB 0
T39 SW., TRIM SELECTOR 14117 FDB FDB A
T39 CIRCUIT BREAKER 42152 FDB FDB 1
T39 NORMAL TRIM ACTIVATION FDB FDB FDH 11111111
T39 SW., TRIM NORMAL < 2 EAK 14113 FDB FDB 1
T39 SW., EMER DISCONNECT < 2 EAK 14116 FDB FDB 1
T39 ALTERNATE TRIM ACTIVATION FDB K FDB AAAAAA
T39 SW., TRIM ALTERNATE < 14115 FDB FDB A
T39 WEIGHT REDUCTION F F K BAA 00000010
T39 SPEED REDUCTION ATTENUATION F 11111111
T39 SPEED REDUCTION ATTN F GA 11111111
T39 SPEED BRAKE POSITIONING FFB 000000100
T39 SPEED BRAKE DOOR ASSY 14810 FFB FFB 1
T39 SKIN 14813 FFB FFB 0
T39 HINGE 14815 FFB FFB A
T39 SUPPORT 14816 FFB FFB 1
T39 CIRCUIT BREAKER 42152 FFB FFB 1
T39 SPEED BRAKE ACTUATION FFB AAAAAA
T39 ACTUATOR < 2 EAK 14821 FFB FFB 1
T39 VALVE, SELECTOR 14823 FFB FFB 5
T39 VALVE, SHUTTLE < 2 EAK 14825 FFB FFB 1
T39 SELECTOR SWITCH 14831 FFB FFB A
T39 NORMAL ACTUATION FFB FFB FFE 11111111
T39 VALVE, THERMAL RELIEF 14822 FFB FFB 2
T39 VALVE, CHECK 14827 FFB FFB 0
T39 ALTERNATE ACTUATION FFB K FFB AAAAAA
T39 VALVE, CHECK 14827 FFB FFB 0
T39 VALVE, EMER SELECTOR 14824 FFB FFB A
T39 PROVISORY ATTENUATION FFB T AAAAAA
T39 EMER RETRACT FFB K FFB AAAAAA
T39 VALVE, DUMP 14828 FFB FFB A
T39 SW., EMER DUMP 9914H FFB FFB A
T39 SW., SELECTOR 14831 FFB FFB A
T39 SPEED BRAKE WARNING FFB K FFB 00000000

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 SW.,LIMIT 14832 FFHA FFH A
T39 LIGHT,WARNING 14834 FFHB FFH 1
T39 LIGHT,PANEL 44241 FFHC FFH 1
T39 LIGHT,MASTER 44242 FFHD FFH 1
T39 LIGHT,INDICATOR 44243 FFHE FFH 1
T39 RLY,TEST 44244 FFHF FFH 0
T39 GUST LOCK FG F 000000000
T39 GUST LOCK ASSY 14911 FGA FG 1
T39 TELEFLEX CABLE SYSTEM 14913 FGB FG 1
T39 GROUND CONTROL G AAAAAAAAAA
T39 SPEED CONTROL GA G C 0000000A0
T39 SPEED CONTROL GA GAX 500000005
T39 WHEEL BRAKING %EA OF 2< GAA GA AAAAAAAAAA
T39 WHEEL BRAKING %EA OF 2< GAA GAD AAAAAAAAAA
T39 ROD ASSY 13611 GAAA GAA 8
T39 BELL CRANK 13612 GAAB GAA A
T39 BRAKE ASSY 13621 GAAC GAA 8
T39 BRAKE CONTROL VALVE 13622 GAAD GAA A
T39 SHUTTLE VALVE 13623 GAAE GAA 5
T39 PRESSURE PLATE 13626 GAAF GAA A
T39 BRAKE DISC 13627 GAAG GAA A
T39 BACK PLATE 13628 GAAH GAA A
T39 DUAL VALVE ASSY 13647 GAAJ GAA 1
T39 PEDAL %2EA< 14521 GAAK GAA 1
T39 PARKING BRAKE GAC GAA 000000000
T39 PARKING BRAKE 13640 GACA GAC 8
T39 TELEFLEX ASSY 13642 GACB GAC 8
T39 DUAL VALVE ASSY 13647 GACC GAC 8
T39 DIFFERENTIAL BRAKING GAD GB K GBA 0A00000AA
T39 ATTENUATION GAX G 111111111
T39 DIRECTIONAL CONTROL GB G 110000011
T39 NOSE WHEEL STEERING GBA GB GAD 110000011
T39 NOSE WHEEL STEERING GBA GBJ FAAAAAAAAA
T39 LINKAGE %2EA< 13511 GBAA GBA 1
T39 BELLCRANK %2EA< 13512 GBAB GBA 1
T39 ROD ASSY %2EA< 13513 GBAC GBA 1
T39 LOCKING LEVER 13514 GBAD GBA 0
T39 PEDAL %4EA< 14521 GBAE GBA 1
T39 STEERING ACTUATION GBB GBA AAAAAAAAAA
T39 CONTROL VALVE 13521 GBBA GBB A
T39 SWIVEL VALVE 13522 GBBS GBB 5
T39 ACTUATING CYLINDER 13523 GBBC GBB 8
T39 CONTROL VALVE FILTER 13524 GBBD GBB 0
T39 CHECK/THERMAL RELIEF VALV 13525 GBBE GBB 1
T39 STEERING CONTROL GBC GBA AAAAAAAAAA
T39 CIRCUIT BREAKER 42152 GBCA GBC 1
T39 LOAD SWITCH MLG EA. OF 2 13244 GBCB GBC 1
T39 MAIN CONTROL GBD GBC K GBF AAAAAAAAAA
T39 LOAD SWITCH NOSE GEAR 13443 GBDA GBD A
T39 CONT WHEEL/COLUMN PILOT 14111 GBDB GBD 1

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 CONT WHEEL/COLUMN COPILOT 14112 GBD GBD 1
T39 NORMAL SELECT GBE GBD AAAAAAAAAA
T39 PEDESTAL 12116 GBEA GBE 1
T39 STANDBY CONTROL GBF GPC K GHD AAAAAAAAAA
T39 AUTO SELECT GBG GBF GBH 111111111
T39 CONTROL BOX 13531 GBGA GBG 8
T39 FEED BACK POT 13532 GBGB GBG A
T39 COMMAND POT 13533 GBGC GBG A
T39 CONTROL RELAY 13534 GBGD GBG 5
T39 HOLD RELAY 13535 GBGE GBG 5
T39 MANUAL SELECT GBH GBE K GBF AAAAAAAAAA
T39 PEDESTAL 12116 GBHA GBH 1
T39 STEERING INDICATION GBJ GBH 333333333
T39 MONITOR SWITCH 13536 GBJA GBJ 0
T39 LIGHT PANEL 44241 GBJB GBJ 1
T39 LIGHT MASTER 44242 GBJC GBJ 1
T39 LIGHT INDICATOR 44243 GBJD GBJ 1
T39 HYDRAULIC DIST GCA G S110000011
T39 HYDRAULIC DIST GCA G C S000000080
T39 HYDRAULIC DIST GCA GAA FAAAAAAAAA
T39 THERMAL RELIEF VALVE 13624 GCAA GCA 1
T39 EMERGENCY PRESSURE GCB GCA K GCC AAAAAAAAAA
T39 RESERVOIR 13625 GCBA GCB A
T39 EMERGENCY BRAKE 13630 GCBH GCB 8
T39 HANDLE ASSY 13631 GCBC GCB 8
T39 TELEFLEX ASSY 13632 GCRD GCB 8
T39 NORMAL DIST GCC GBB FAAAAAAAAA
T39 NORMAL DIST GCC GCA GCH 111111111
T39 MISSION SUPPORT M M AAAAAAAAAA
T39 SUPPORT EQUIPMENT MA M C00000000
T39 FLOOR 1211A MAA MA 0
T39 INERTIA REEL 1211B MAB MA 0
T39 UPHOLSTERY 1211D MAC MA 0
T39 SEAT COCKPIT 12130 MAL MA 1
T39 WELD ASSY 12132 MAM MA 1
T39 SAFETY BELT 12133 MAN MA 1
T39 BAGGAGE COMPARTMENT GEN 12200 MAP MA C
T39 CABIN COMPARTMENT GEN 12300 MAQ MA C
T39 SEAT CABIN 12330 MAR MA 0
T39 SEAT PAN 12332 MAS MA 0
T39 SEAT BELT 12336 MAT MA 1
T39 CHURCH KEY 9912X MAV MA A
T39 LANDING GEAR N N AAAAAAAAAA
T39 EXTEND GEAR NA N 0000000A0
T39 EXTEND MAIN GEAR NAA NA AAAAAAAAAA
T39 NORMAL CONTROL NAB NA NAC 111111111
T39 INST PANEL PILOT INBRD 12112 NABA NAB 1
T39 GEAR AND DOOR CONT VALVE 13111 NABH NAB A
T39 GEAR CONTROL HANDLE 13112 NABC NAB A
T39 DOWNLOCK SWITCH 2EA 13242 NABD NAB A

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 AFT RELAY PANEL 9913A NABE NAB 1
T39 CIRCUIT BREAKER 42152 NABG NAB 1
T39 CONTROL UNLOCK BACKUP NAC NA K NAB AAAAAAAAAA
T39 CONTROL UNLOCK BACKUP NAC NAD K NAE AAAAAAAAAA
T39 CONTROL UNLOCK BACKUP NAC NBB K NBC AAAAAAAAAA
T39 DOOR ACTUATE EA OF 2 NAD NAA AAAAAAAAAA
T39 TORQUE TUBE FAIRING DOOR 11242 NADA NAD A
T39 LOCK ROLLER FAIRING DOOR 11246 NADB NAD A
T39 LOCK ASSY STRUT DOOR 1125A NADC NAD A
T39 LOCK ROLLER STRUT DOOR 11253 NADD NAD A
T39 DOOR UNLOCK AND OPEN NAE NAD NAC 111111111
T39 DOOR ACTUATING CYLINDER 13234 NAEA NAE A
T39 SHUTTLE VALVE 13235 NAEB NAE 1
T39 CHECK VALVE 13236 NAEC NAE 1
T39 RESTRICTOR 13237 NAED NAE 1
T39 DOOR OPERATE NAF NAD AAAAAAAAAA
T39 MAIN GEAR DOOR ASSY 11240 NAFA NAF 8
T39 ROD 11243 NAFB NAF A
T39 HINGE FORWARD 11244 NAFC NAF 1
T39 HINGE AFT 11245 NAFO NAF 1
T39 MG STRUT DOOR ASSY 11250 NAFF NAF 8
T39 DOOR ATTACHING 1321D NAFF NAF 1
T39 TORQUE LINK 13214 NAFG NAF 8
T39 EMERGENCY CONTROL NAG NAC AAAAAAAAAA
T39 EMERGENCY CONTROL NAG NAK AAAAAAAAAA
T39 EMERGENCY CONTROL NAG NAN AAAAAAAAAA
T39 EMERGENCY CONTROL NAG NBB AAAAAAAAAA
T39 INSTR PANEL PLT OUTBRD 12111 NAGA NAG 1
T39 INSTR PANEL PLT INBRD 12112 NAGB NAG 1
T39 EMERGENCY SYSTEM 1314C NAGC NAG 0
T39 HANDLE ASSY 13141 NAGD NAG A
T39 DOOR EMERG UNLOCK AND OPEN NAH NAC AAAAAAAAAA
T39 CABLE ASSY 13142 NAHA NAH A
T39 LINKAGE 13145 NAHB NAH A
T39 LG DUMP VALVE DOOR 13148 NAHC NAH 5
T39 GEAR UNLOCK EA OF 2 NAJ NAA AAAAAAAAAA
T39 UPLOCK MECHANISM 13216 NAJA NAJ A
T39 UPLOCK RELEASE BACKUP NAK NAJ K NAL AAAAAAAAAA
T39 UPLOCK RELEASE NAL NAJ NAK 111111111
T39 UPLOCK ACTUATING CYLINDER 13232 NALA NAL 3
T39 ACTUATOR PIN 1321F NALB NAL A
T39 DOOR UPLOCK SWITCH 13243 NALC NAL A
T39 GEAR ACTUATE EA OF 2 NAM NAA AAAAAAAAAA
T39 DOWNLOCK MECHANISM 13217 NAMA NAM A
T39 STRUT ASSY 13212 NAMB NAM 8
T39 SIDE BRACE 13213 NAMC NAM A
T39 LINKAGE 13215 NAMD NAM A
T39 ROTATE AND LOCK BACKUP NAN NAM K NAP AAAAAAAAAA
T39 ROTATE AND LOCK NAP NAM NAN 111111111
T39 ACTUATING CYLINDER 13231 NAPA NAP A

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 DOWNLOCK ACTUATING CYL 13233 NAPB NAP A
T39 CHECK VALVE 13236 NAPC NAP 1
T39 DOOR CLOSE AND LOCK NAQ NAP 000000000
T39 TORQUE TUBE 11242 NAQA NAQ A
T39 LOCK ROLLER 11246 NAQB NAQ A
T39 DOOR ACTUATING CYLINDER 13234 NAQC NAQ A
T39 DOWNLOCK SWITCH 13242 NAQD NAQ A
T39 EMERGENCY GEAR RELEASE NAR NAC AAAAAAAAAA
T39 EMERGENCY GEAR RELEASE NAR NAK AAAAAAAAAA
T39 CARLE ASSY 13142 NARA NAR A
T39 LINKAGE 13145 NARB NAR A
T39 LG DUMP VALVE GEAR 13148 NARC NAR 5
T39 GEAR FREE FALL AND LOCK NAS NAC AAAAAAAAAA
T39 GEAR FREE FALL AND LOCK NAS NAK AAAAAAAAAA
T39 GEAR FREE FALL AND LOCK NAS NAN AAAAAAAAAA
T39 GEAR FREE FALL AND LOCK NAS NRG AAAAAAAAAA
T39 BUNGEE 2EA 13146 NASA NAS 5
T39 BUNGEE NOSE 13414 NASB NAS 5
T39 EXTEND INDICATION NAT NAG AAAAAAAAAA
T39 WARNING SYSTEM 13120 NATA NAT 0
T39 POSITION INDICATOR LIGHT 1312A NATB NAT 1
T39 CONTROL HANDLE LIGHT 1312B NATC NAT 1
T39 DIMMING RESISTOR 1312C NATD NAT 0
T39 HORN 13121 NATE NAT 1
T39 CUTOUT SWITCH 13122 NATF NAT 0
T39 THROTTLE POSITION SWITCH 13123 NATG NAT 0
T39 RELAY 13124 NATH NAT 0
T39 SIGNAL GENERATOR 13125 NATJ NAT 0
T39 RECTIFIER 13126 NATK NAT 0
T39 CIRCUIT BREAKER COCKPIT 13128 NATL NAT 1
T39 DOWNLOCK SWITCH 2EA 13242 NATM NAT A
T39 DOOR UPLOCK SWITCH 2EA 13243 NATN NAT 1
T39 DOWNLOCK SWITCH 13442 NATP NAT A
T39 AIRSPEED ALT WARN SWITCH 51246 NATQ NAT 0
T39 EXTEND NOSE GEAR NBA NA AAAAAAAAAA
T39 GEAR AND DOOR UNLOCK NBB NBA AAAAAAAAAA
T39 LOCK NG DOOR 11227 NBBA NBB A
T39 UPLOCK MECHANISM 13410 NB88 NBB A
T39 GEAR AND DOOR RELEASE NBC NBB NAC 111111111
T39 TORQUE LINK 13416 NBGA NBC A
T39 UPLOCK ACTUATING CYLINDER 13432 NB8B NBC A
T39 GEAR ACTUATE NBF NBA AAAAAAAAAA
T39 DOWN LOCK MECHANISM 1341E NBFA NBF A
T39 AXLE CENTERING BLOCK ASSY 1341C NBFB NBF 1
T39 STRUT ASSY 13412 NBFC NBF 8
T39 DRAG BRACE 13413 NBFD NBF A
T39 TRUNNION 13415 NBFE NBF A
T39 TORQUE LINK 13416 NBFF NBF A
T39 GEAR ROTATE AND LOCK BACKUP NBG K NBH AAAAAAAAAA
T39 GEAR ROTATE AND LOCK NBH NBF NBG 111111111

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12345678901234567890123456789012345678901234567890123456789012345678901234567890

T39 ACTUATING CYLINDER GEAR	13431	NBHJ	NBH	A
T39 DOWNLOCK ACTUATING CYL	13433	NBHK	NBH	A
T39 RESTRICTOR	13434	NBHL	NBH	1
T39 DOOR OPEN		NBJ	NBF	AAAAAAAAAA
T39 NOSE GEAR DOOR ASSY	11220	NBJA	NBJ	1
T39 LINKAGE	1122A	NBJB	NBJ	2
T39 HINGE FORWARD	11222	NBJC	NBJ	0
T39 HINGE AFT	11223	NBJD	NBJ	0
T39 RETRACT GEAR		NC	NX	010000000
T39 RETRACT CONTROL		NCA	NC	AAAAAAAAAA
T39 INST PANEL PILOT INBOARD	12112	NCAA	NCA	1
T39 GEAR AND DOOR CONT VALVE	13111	NCAB	NCA	A
T39 GEAR CONTROL HANDLE	13112	NCAC	NCA	A
T39 UPLOCK SWITCH 2EA	13241	NCAD	NCA	A
T39 LOAD SWITCH 2EA	13244	NCAE	NCA	1
T39 UPLOCK SWITCH NOSE	13441	NCAF	NCA	A
T39 CIRCUIT BREAKER	42152	NCAG	NCA	1
T39 AFT RELAY PANEL	9913A	NCAH	NCA	A
T39 MLG RETRACT EA OF 2		NCB	NC	AAAAAAAAAA
T39 DOOR OPERATION		NCD	NCB	AAAAAAAAAA
T39 MAIN GEAR DOOR ASSY	11240	NCDA	NCD	1
T39 TORQUE TUBE	11242	NCDB	NCD	A
T39 ROD	11243	NCDC	NCD	A
T39 HINGE FORWARD	11244	NCDD	NCD	A
T39 HINGE AFT	11245	NCDE	NCD	A
T39 LOCK ROLLER	11246	NCDF	NCD	A
T39 DOOR ACTUATING CYLINDER	13234	NCDG	NCD	8
T39 SHUTTLE VALVE	13235	NCDH	NCD	1
T39 CHECK VALVE	13236	NCDJ	NCD	1
T39 RESTRICTOR	13237	NCDK	NCD	1
T39 MAIN GEAR STRUT DOOR ASSY	11250	NCDL	NCD	1
T39 LOCK ASSY	1125A	NCDM	NCD	A
T39 LOCK ROLLER	11253	NCDN	NCD	A
T39 DOOR ATTACHING	13210	NCDP	NCD	A
T39 GEAR LOCK RELEASE		NCE	NCB	AAAAAAAAAA
T39 TORQUE LINK	13214	NCEA	NCE	A
T39 DOWNLOCK MECHANISM	13217	NCEB	NCE	A
T39 DOWNLOCK ACTUATING CYL	13233	NCEC	NCE	A
T39 CHECK VALVE	13236	NCED	NCE	1
T39 DOOR UPLOCK SWITCH	13243	NCEE	NCE	A
T39 GEAR UP AND LOCK		NCF	NCB	AAAAAAAAAA
T39 ACTUATOR PIN	1321F	NCFA	NCF	A
T39 STRUT ASSY	13212	NCFB	NCF	8
T39 SIDE BRACE	13213	NCFC	NCF	A
T39 TORQUE LINK	13214	NCFD	NCF	A
T39 LINKAGE	13215	NCFE	NCF	A
T39 UPLOCK MECHANISM	13216	NCFE	NCF	A
T39 ACTUATING CYLINDER	13231	NCFG	NCF	A
T39 UPLOCK ACTUATING CYLINDER	13232	NCFH	NCF	A
T39 RESTRICTOR	13237	NCFJ	NCF	1

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 NLG RETRACT NCH NC AAAAAAAAAA
T39 GEAR AND DOOR LOCK RELEASE NCJ NCH AAAAAAAAAA
T39 LOCK NOSE DOOR 11227 NCJA NCJ A
T39 DOWNLOCK MECHANISM 1341E NCJB NCJ A
T39 TORQUE LINK 13416 NCJC NCJ A
T39 DOWNLOCK ACTUATING CYL 13433 NCJD NCJ A
T39 GEAR UP AND LOCK NCK NCH AAAAAAAAAA
T39 AXLE CENTERING BLOCK ASSY 1341C NCKB NCK 1
T39 UPLOCK MECHANISM 1341D NCKC NCK A
T39 STRUT ASSY 13412 NCKD NCK 8
T39 DRAG BRACE 13413 NCKE NCK A
T39 TRUNNION 13415 NCKF NCK A
T39 TORQUE LINK 13416 NCKG NCK A
T39 ACTUATING CYLINDER 13431 NCKK NCK A
T39 UPLOCK ACTUATING CYLINDER 13432 NCKL NCK A
T39 RESTRICTOR 13434 NCKM NCK 1
T39 DOOR CLOSE AND LOCK NCL NCH AAAAAAAAAA
T39 LINKAGE 1122A NCLA NCL A
T39 HINGE FORWARD 11222 NCLB NCL 1
T39 HINGE AFT 11223 NCLC NCL 1
T39 LOCK 11227 NCLD NCL A
T39 RETRACT INDICATION NCM NX I NC 010000000
T39 WARNING SYSTEM 1312C NCMA NCM 0
T39 POSITION INDICATING LIGHT 1312A NCMB NCM 1
T39 CONTROL HANDLE LIGHT 1312B NCMC NCM 1
T39 DIMMING RESISTOR 1312C NCMD NCM 0
T39 RECTIFIER 13126 NCME NCM 1
T39 CIRCUIT BREAKER 13128 NCMF NCM 1
T39 UPLOCK SWITCH 2EA 13241 NCMG NCM A
T39 DOOR UPLOCK SWITCH 2EA 13243 NCMJ NCM A
T39 UPLOCK SWITCH NOSE 13441 NCMK NCM A
T39 ROLLING SUPPORT ND N 1A00000A1
T39 WHEELS 13700 NDAA ND 0
T39 MAIN WHEEL 2EA 13711 NDAB ND A
T39 NOSE WHEEL 2EA 13731 NDAC ND A
T39 TIRES 13800 NDAD ND 0
T39 MAIN TIRE RH 13812 NDAE ND 8
T39 MAIN TIRE LH 13813 NDAF ND 8
T39 NOSE TIRE 2EA 13821 NDAG ND 4
T39 AXLE BEARING SEAL 1341A NDAH ND 0
T39 AXLE 13417 NDAJ ND A
T39 AXLE BEARING 13418 NDAK ND 1
T39 RETRACT ATTENUATION NX N 111111111
T39NON ESSENTIAL AC UAA CFG AAAAAAAAAA
T39NON ESSENTIAL AC UAA CHEA FAAAAAAAAA
T39NON ESSENTIAL AC UAA CHF AAAAAAAAAA
T39 NONESSENTIAL AC DIST UAA DFA AAAAAAAAAA
T39 NONESSENTIAL AC DIST UAA EAE 111111111
T39 ESSENTIAL AC DISTRIBUTION UAB BAZB AAAAAAAAAA
T39 ESSENTIAL AC DISTRIBUTION UAB BAZE AAAAAAAAAA

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 ESSENTIAL AC DISTRIBUTION            UAB            HSQ            AAAAAAAAAA
T39 ESSENTIAL AC DISTRIBUTION            UAB            BSY            AAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CFA            AAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CFL            FAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CHBA           FAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CHBR           FAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CHC            AAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CHEB           FAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CJ            FAAAAAAAAA
T39 ESSENTIAL AC BUS                    UAB            CL            AAAAAAAAAA
T39 ESSENTIAL AC DIST                   UAB            DAA            AAAAAAAAAA
T39 ESSENTIAL AC DIST                   UAB            EAE            111111111
T39 ESSENTIAL AC DIST                   UAB            ECR            AAAAAAAAAA
T39 ESSENTIAL AC DIST                   UAB            EEG            555555555
T39 ESSENTIAL AC DIST                   UAB            UHG            111111111
T39 NORMAL FEED                          UAC            UAB            UAD            111111111
T39 INVERTER CHANGOVER CONTROL 42232    UAC            UAC            1
T39 RELAY AC TRANSFER                   42234    UACB           UAC            1
T39 EMERGENCY FEED                       UAD            UAB            K UAC           AAAAAAAAAA
T39 INVERTER CHANGE OVER CONTR 42232    UADA           UAD            A
T39 RELAY AC TRANSFER                   42234    UADB           UAD            A
T39 MAIN INVERTER SYSTEM                UAE            UAA            AAAAAAAAAA
T39 MAIN INVERTER SYSTEM                UAE            UAC            AAAAAAAAAA
T39 INVERTER MAIN                        42221    UAEA           UAC            A
T39 SWITCH INVERTER                      42224    UAEB           UAF            A
T39 CKT BKRS MAIN INV                   42225    UAEC           UAF            A
T39 RELAY MAIN INV POWER                42238    UAED           UAF            A
T39 STANDBY INVERTER SYSTEM              UAF            UAD            AAAAAAAAAA
T39 INVERTER STANDBY                    42222    UAFA           UAF            A
T39 CKT BKRS,STBY INV                   42225    UAFB           UAF            A
T39 SWITCH INVERTER                      42224    UAFC           UAF            A
T39 POWER WARNINGS                       UAG            UAD            000000000
T39 CAUTION LIGHT PANEL                 44241    UAGA           UAG            1
T39 MASTER CAUTION LIGHT                44242    UAGB           UAG            0
T39 CAUTION LIGHT, INV FAIL             44243    UAGC           UAG            1
T39 CAUTION LIGHT, INST PWROFF 44243    UAGD           UAG            1
T39 RELAY,TEST                           44244    UAGE           UAG            0
T39 ESSENTIAL DC DISTRIBUTION            UDA            BAM            AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BAP            AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BAZC           AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BAZD           AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BAZK           AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BBA            AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BPH            SAAAAAAAAA
T39 ESSENTIAL DC DIST                    UDA            BPC            FAAAAAAAAA
T39 ESSENTIAL DC DIST                    UDA            BPD            FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BPH            AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BSE            AAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION            UDA            BSN            FAAAAAAAAA

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FLIGHT SAFETY PREDICTION TECHNIQUE

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00000000011111111112222222223333333333444444444555555555666666666677777777778
12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 ESSENTIAL DC DISTRIBUTION UDA BSS FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA BST FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA BSU FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA BSV FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA BSW FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA BSZ FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA BTA FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CA FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CB FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CC FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA CE S008888800
T39 ESSENTIAL DC BUS UDA CFA FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CFL FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CG FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CHCY FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CHEA FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CHF FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CJ FAAAAAAAAA
T39 ESSENTIAL DC BUS UDA CL FAAAAAAAAA
T39 ESSENTIAL DC UDA DAB FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA DAV FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA DBN FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA DC FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA DEA FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EAE FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EAN FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EAP FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EAQ FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EBA FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EBB FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA ECA FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EDA FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA EEG FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA FAA 00AAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA FBD FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA FCE FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA FDF FAAAAAAAAA
T39 ESSENTIAL DC DISTRIBUTION UDA FFB FAAAAAAAAA
T39 ESSENTIAL DC UDA GBC FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA NAB FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA NAT FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA NCA FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA NCM FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA UAF FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA UHB FAAAAAAAAA
T39 ESSENTIAL DC DIST UDA UHG F111111111
T39 CKT BKRS ESSENTIAL BUS 42152 UDAA 1
T39 BOX POWER DIST 42157 UDAB 1
T39 BOX RELAY 42158 UDAC 1
T39 TERMINAL STRIP 42150 UDAD 0

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 SECONDARY DC BUS UDB CFBB AAAAAAAAAA
T39 SECONDARY DC BUS UDB CFDB FAAAAAAAAA
T39 SECONDARY DC BUS UDB CFEC FAAAAAAAAA
T39 SECONDARY DC BUS UDB CHBC FAAAAAAAAA
T39 SECONDARY DC BUS UDB CHED FAAAAAAAAA
T39 SECONDARY DC DIST VIBRATE UDB DA F000000000
T39 SECONDARY DC DIST UDB DBQ AAAAAAAAAA
T39 SECONDARY DC DIST UDB EAE 111111111
T39 SECONDARY DC DIST UDB EAK AAAAAAAAAA
T39 SECONDARY DC DIST UDB EBB AAAAAAAAAA
T39 SECONDARY DC DIST UDB ECP AAAAAAAAAA
T39 CKT BKRS, SEC BUS 42152 UDDBA UDB A
T39 BOX POWER DIST 42157 UDDBB UDB 1
T39 BOX RELAY 42158 UDDBC UDB 1
T39 RFLAY SECONDARY BUS 99428 UDBD UDB A
T39 TERMINAL STRIP 42150 UDDE UDB 1
T39 STARTER BUS POWER DIST UDC BAN AAAAAAAAAA
T39 PARALELLING BUS UDD UAA SAAAAAAAAA
T39 PARALELLING BUS UDD UAB S111111111
T39 PARALELLING BUS UDD UAE FAAAAAAAAA
T39 PARALELLING BUS UDD UDB FAAAAAAAAA
T39 PARALELLING BUS UDD UDH AAAAAAAAAA
T39 PARALELLING BUS UDD UHB AAAAAAAAAA
T39 TERMINAL STRIP 42150 UDDA UDB C
T39 BOX POWER DIST 42157 UDDB UDB 1
T39 BOX RELAY 42158 UDDC UDB 1
T39 BATTERY BUS UDE DDB AAAAAAAAAA
T39 BATTERY BUS UDE EAD AAAAAAAAAA
T39 BATTERY BUS UDE UAB K UDH SAAAAAAAAA
T39 BATTERY BUS UDE UDJ SAAAAAAAAA
T39 BATTERY BUS UDE UDK FAAAAAAAAA
T39 BATTERY BUS UDE UDL FAAAAAAAAA
T39 BATTERY BUS UDE UDM FAAAAAAAAA
T39 TERMINAL STRIP 42150 UDEA UDE 1
T39 BOX POWER DIST 42157 UDEB UDE 1
T39 BOX RELAY 42158 UDEC UDE 1
T39 EXTERNAL START POWER UDF UDC 100000000
T39 RECEPTACLE EXT START 42154 UDFA UDF A
T39 MICROSWITCH 42155 UDFB UDF 1
T39 BATTERY START POWER UDG UDC 100000000
T39 RELAY BATTERY START 42171 UDGA UDG A
T39 NORMAL OPERATION UDH UDA UDJ 111111111
T39 RELAY ESSENTIAL BUS 42177 UDHA UDH A
T39 BACKUP OPERATION UDJ UDA K UDH AAAAAAAAAA
T39 RELAY ESS BUS EMER K512 9942A UDJA UDJ A
T39 MASTER SWITCH 42156 UDJB UDJ A
T39 AUTO SWITCHING UDK UDL 111111111
T39 RELAY GEN MONITOR 4217C UDKA UDK A
T39 BATTERY SWITCH 4211B UDKB UDK A
T39 MANUAL SWITCHING UDL UDJ K UDK AAAAAAAAAA

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1234567890123456789012345678901234567890123456789012345678901234567890
T39 BATTERY SWITCH 42118 UDLA UDL A
T39 BATTERY PARALLELING 42118 UDM UDD 0000C0000
T39 RELAY BATTERY 42176 UDMA UDM A
T39 GENERATOR STATUS 42176 UDN UDJ 0000C0000
T39 VOLTMETER 4213C UONA UDN 1
T39 GEN OFF WARN LIGHT 44243 UDNB UDN 1
T39 CAUTION LIGHT PANEL 44241 UDNC UDN 1
T39 MASTER CAUTION LIGHT 44242 UDND UDN 0
T39 RELAY TEST 44244 UDNE UDN 0
T39 GEN LIGHT CKT BKR 42152 UDNF UDN 1
T39 LOAD SWITCH 4215F UDNG UDN 0
T39 VOLTMETER TEST SWITCH 4213A UDNH UDN 1
T39 LOADMETER 4213B UDNI UDN 1
T39 CKT BKR VOLTMETER 42152 UDNK UDN 1
T39 EXTERNAL UTILITY POWER 42152 UDP UDD 000000000
T39 PLUG DISCONNECT 4215C UDPA UDP 0
T39 RECEPTACLE EXT UTIL 42153 UDPB UDP 8
T39 RELAY EXT PWR CUTOFF 42172 UDPC UDP A
T39 RELAY EXT PWR MONITOR 42175 UDPD UDP A
T39 LEFT GENERATOR SYSTEM LUDQ UDR AAAAAA
T39 LEFT GENERATOR SYSTEM LUDQ UDD KRUDQ AAAAAA
T39 RIGHT GENERATOR SYSTEM RUDQ UDB AAAAAA
T39 RIGHT GENERATOR SYSTEM RUDQ UDD KLUDQ AAAAAA
T39 STARTER GENERATOR 42131 LUDQA LUDQ A
T39 STARTER GENERATOR 42131 RUDQA RUDQ A
T39 ADAPTER QAD 42132 LUDQB LUDQ A
T39 ADAPTER QAD 42132 RUDQB RUDQ A
T39 DUCT FLEX COOLING 42135 LUDQC LUDQ 1
T39 DUCT FLEX COOLING 42135 RUDQC RUDQ 1
T39 VOLTAGE REGULATOR 42136 LUDQD LUDQ A
T39 VOLTAGE REGULATOR 42136 RUDQD RUDQ A
T39 RELAY GEN MONITOR 4217C LUDQE LUDQ A
T39 RELAY GEN MONITOR 4217C RUDQE RUDQ A
T39 RELAY GEN FIELD CONTROL 4217D LUDQF LUDQ A
T39 RELAY GEN FIELD CONTROL 4217D RUDQF RUDQ A
T39 CKT BKRS 42152 LUDQG LUDQ A
T39 CKT BKRS 42152 RUDQG RUDQ A
T39 MASTER SWITCH 42156 LUDQH LUDQ A
T39 MASTER SWITCH 42156 RUDQH RUDQ A
T39 REVERSE CURRENT RELAY 9942C LUDQJ LUDQ A
T39 REVERSE CURRENT RELAY 9942C RUDQJ RUDQ A
T39 GEN SWITCH 9942D LUDQK LUDQ A
T39 GEN SWITCH 9942D RUDQK RUDQ A
T39 BATTERY SYSTEM NO.1 LUDR UDE 55555555
T39 BATTERY SYSTEM NO.1 LUDR UDG AAAAAA
T39 BATTERY SYSTEM NO.2 RUDR UDE 55555555
T39 BATTERY SYSTEM NO.2 RUDR UDG AAAAAA
T39 BATTERY 42111 LUDRA LUDR 8
T39 BATTERY 42111 RUDRA RUOR 8
T39 QUICK DISCONNECT 42114 LUORB LUDR A

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12345678901234567890123456789012345678901234567890123456789012345678901234567890

T39 QUICK DISCONNECT	42114	RUDRB	RUDR	A
T39 CABLE	42115	LUORC	LUOR	8
T39 CABLE	42115	RUDRC	RUDR	8
T39 SUMP JAR	42116	LUORD	LUOR	1
T39 SUMP JAR	42116	RUDRD	RUDR	1
T39 VENT AND DRAIN HOSE	42118	LUORE	LUOR	0
T39 VENT AND DRAIN HOSE	42118	RUDRE	RUDR	0
T39 NORMAL HYD DISTRIBUTION		UHA	FFD	AAAAAAAAAA
T39 NORMAL HYDRAULIC DIST		UHA	GCC	UHD 111111111
T39 NORMAL HYDRAULIC DIST		UHA	NAB	S555555555
T39 NORMAL HYDRAULIC DIST		UHA	NCA	S555555555
T39 CHECK VALVE HYDR 4EA	4531A	UHAA	UHA	1
T39 FILLER VALVE ACCUMULATOR	4521C	UHAB	UHA	1
T39 ACCUMULATOR	45211	UHAC	UHA	1
T39 RELIEF VALVE	45214	UHAD	UHA	1
T39 DUMP VALVE	45215	UHAE	UHA	0
T39 FILTER PRESSURE	45216	UHAF	UHA	1
T39 NORMAL HYD PRESSURE		UHB	UHA	AAAAAAAAAA
T39 NORMAL HYD PRESSURE		UHB	UHD	FA00000000
T39 CIRCUIT BREAKER 2EA	42152	UHBA	UHB	1
T39 CHECK VALVE HYDR	4511A	UHBB	UHB	0
T39 PRESSURE SWITCH 2EA	4511F	UHBC	UHB	A
T39 MOTOR HYDRAULIC PUMP	4511L	UHBD	UHB	A
T39 MOTOR DRIVEN PUMP	45111	UHBE	UHB	8
T39 FILTER RETURN	45217	UHBF	UHB	1
T39 HYDRAULIC PUMP SWITCH	9945A	UHBG	UHB	A
T39 HYDRAULIC SUPPLY		UHC	UHB	AAAAAAAAAA
T39 CHECK VALVE AIR	4511R	UHCA	UHC	1
T39 DRAIN VALVE AIR TANK	4511C	UHCB	UHC	0
T39 FILTER AIR	4511D	UHCC	UHC	0
T39 COUPLING EXTERNAL HYD	4511G	UHCD	UHC	0
T39 COUPLING EXTERNAL AIR	4511J	UHCH	UHC	0
T39 CAP AIR COUPLING	4511K	UHCH	UHC	0
T39 PRESSURE REGULATOR	45114	UHCK	UHC	1
T39 RESERVOIR ASSY	45115	UHCL	UHC	8
T39 TANK AIR	45116	UHCM	UHC	1
T39 FILLER CAP RESERVOIR	45117	UHCN	UHC	0
T39 DRAIN VALVE RESERVOIR	45118	UHCP	UHC	1
T39 AUXILLIARY HYD DISTRIBUTION		UHD	FFE	AAAAAAAAAA
T39 AUXILIARY HYDRAULIC DIST		UHD	GCC	K UHA AAAAAAAAAA
T39 CHECK VALVE NORMAL 4 FA	4511A	UHDA	UHD	1
T39 ACCUMULATOR AUX	45311	UHDB	UHD	A
T39 FILLER VALVE ACCUM AUX	45313	UHDC	UHD	8
T39 RELIEF VALVE AUX	45316	UHDD	UHD	1
T39 DUMP VALVE AUX	45317	UHDE	UHD	0
T39 SHUT OFF VALVE AUX	45318	UHDF	UHD	A
T39 CKT BKR	42152	UHDG	UHD	0
T39 PRESSURE INDICATION		UHG	UHD	111111111
T39 CIRCUIT BREAKER	42225	UHGA	UHG	1
T39 LIGHT PANEL CAUTION	44241	UHGB	UHG	1

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12345678901234567890123456789012345678901234567890123456789012345678901234567890
T39 LIGHT MASTER CAUTION 44242 UHGC UHG 1
T39 LIGHT INDICATOR CAUTION 44243 UHGD UHG 1
T39 GAGE PRESSURE 4521A UHGE UHG 1
T39 GAGE ACCUMULATOR NORM 4521B UHGF UHG 0
T39 PRESSURE TRANSMITTER NORM 45213 UHGG UHG 1
T39 GAGE ACCUMULATOR AUX 45312 UHGH UHG 0
T39 PRESSURE TRANSMITTER AUX 45315 UHGJ UHG 0
T39 PRESSURE SNUBBER 45212 UHGK UHG 0
T39 PRESSURE SNUBBER AUX 45314 UHGL UHG 0

CARD COUNT IS 00001808. CARDS WITH ERRORS 00000000